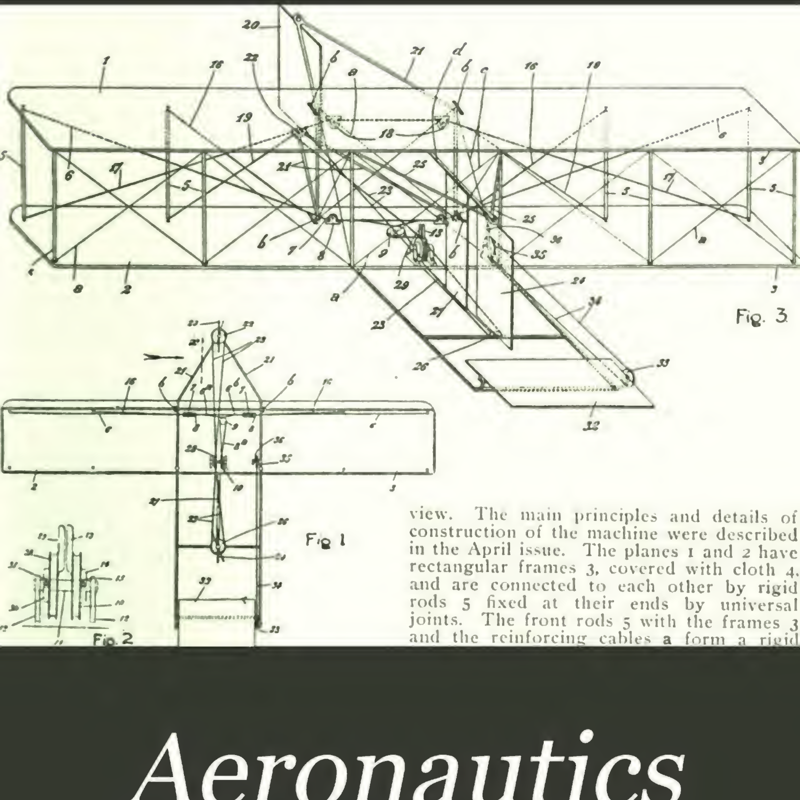

view. The main principles and details of construction of the machine were described in the April issue. The planes 1 and 2 have rectangular frames 3, covered with cloth 4, and are connected to each other by rigid rods 5 fixed at their ends by universal joints. The front rods 5 with the frames 3 and the reinforcing cables **a** form a rigid

Aeronautics

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AERONAUTICS

THE AMERICAN MAGAZINE OF AERIAL LOCOMOTION

VOL 5
NO. 1

JULY '09

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July 1909
1910

CURTISS AEROPLANE IN FLIGHT

H. M. Benner Photo

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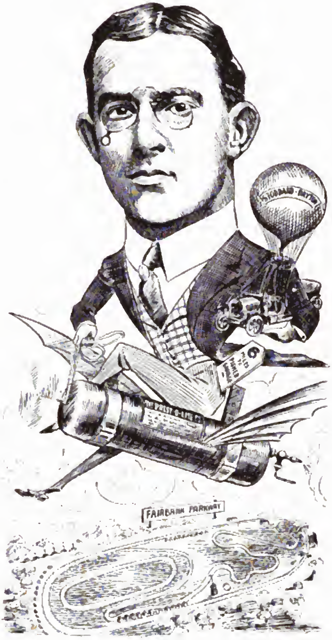

CARL G. FISHER.

PRESIDENT INDIANAPOLIS AERO CLUB.

THIS man, he hung a motor car
  Beneath a big balloon
Which rose right up without a jar
  And sailed straight for the moon.
He took along some Prest-O-Lite
  To show the folks up there
A manufactured light more bright
  Than folks have anywhere.

And now he's planning day by day
  A still more startling flight
O'er Indiana's new Parkway
  The Hoosiers to delight.
He's going to sail in motor cars
  Without a big balloon
And aviate right up to Mars
  But come back very soon.

AERONAUTICS

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TALKS WITH INVENTORS.

Our readers—a great number of whom are inventors—will be interested to note in this issue the beginning of a series of legal articles on the patent laws of the United States and foreign countries. These articles are contributed by F. O. Andreae, a patent attorney, in the shape of short discussions written with the sole object of assisting inventors. The more important provision of our own laws, as well as those of countries abroad, will be dealt with as broadly as possible, consistent with limited space; and attention will be called to some points which, if taken advantage of, will save trouble and annoyance to patentees. Mr. Andreae has decided to make a specialty of aeronautic patents and all matters pertaining thereto.

THE AUGUST ISSUE.

The next issue, August, will contain the second propeller lesson by John Squires, M.E., Chief of the Physical Laboratory of the E. R. Thomas Motor Co. The first "lesson" was printed in the June issue and created a tremendous interest. Nowhere has there ever before been printed such a concise statement of what a propeller does when area, speed or pitch is changed. Basic laws were laid down in this first instalment. At the urgent request of many of our readers, Mr. Squires has kindly consented to give us the second of what we hope may be a series of most valuable data-giving propeller articles.

NOTICE.

Owing to lack of space in this issue, the list of "Ascensions" and many interesting news notes will be published in the succeeding issue.

John Squires, M. E.
Photo by Nussbaumer

GOVERNMENT AERO APPROPRIATION.

Charles Jerome Edwards, in his speech at the luncheon to the Wrights, expressed in public what thousands are thinking or saying in private. The New York "Times" on June 6th blew a blast of bully stuff on the forgetfulness of Uncle Sam when it comes to encouraging home invention. Even when Europe finances American appliances, commercial or warlike, our own government is proverbially slow even to follow the sagacious footsteps of its sister countries.

Another appropriation will be asked for military aeronautics. When it comes up use all your persuasive powers to induce your representatives and senators to do something.

"AERONAUTICS" FIRST WITH NEWS.

"One of the most praiseworthy qualities of your magazine is the promptness with which you obtain your news. Several of the items which you had published in the January issue I found nowhere else until a month later. In my opinion, however, articles concerning the vital points of aeronautics, such as the best shape for the lifting surface of an aerocurve, or means of securing automatic stability or some other such thing, would be of more interest to the reader than stories of balloon rides, etc., although these do tend to create enthusiasm for the sport.

As a whole, your magazine is very interesting to me, both on account of the great amount of information furnished and because of the fine and exact style in which it is written.—Subscriber.

AERONAUTIC CALENDAR.

June 15.—Herring should begin trials at Washington about now to complete by July 1.

June 17-18.—Wright celebration at Dayton, Ohio.

June 26.—Exhibition of the Aeronautic Society at Morris Park, N. Y.

June 28.—Wright Brothers must complete contract at Washington.

July 10.—Aero Exposition at Frankfort, Germany, till October 10.

Aug. 1.—Landing Balloon Contest, Aeronautique Club of France.

Aug. 3-7.—Balloon ascents at Milwaukee Home Week Celebration.

Aug. 29.—Gordon Bennett Aviation Contest.

Aug. 22-29.—Aviation Week at Rheims.

Sept. 4-19.—Austrian Aero and Industrial Exhibition at Linz.

Sept. 5-11.—Daily Balloon Ascents during North Adams' Old Home Week.

Sept. 25-Oct. 9.—Hudson-Fulton Celebration, New York.

Sept. 30-Oct. 8.—Motor Exhibition of Aeronautic Engines at Paris.

Oct. 3.—Gordon Bennett Balloon Race at Zurich, Switzerland, twenty balloons entered.

Oct. 4.—Aero Club of St. Louis Balloon Race.

QUESTIONS AND ANSWERS.

Q. In a storm blowing at the rate of 35 miles an hour, striking an obstruction presenting a surface one foot square, is there a known rule by which to calculate the pressure on the front surface and the influence it must exert at the back of the plane?

Ans. The rule for calculating rectangular wind pressures is to multiply the rate of speed, in miles per hour, by itself (square it) and by a known co-efficient. In reference books, wind tables give for a speed of 35 miles an hour a pressure of 6.125 lbs. per square foot, being based on the Smeaton co-efficient of 0.005. Hence, 35x35x0.005=6.125 pounds. Langley's experiments, since confirmed by those of Mr. Eiffel, gave a co-efficient of 0.00327. Hence, 35x35x0.00327=4.00 pounds per square foot. It is not known accurately how much of this pressure is on the front and how much rarefaction there is on the back.

Q. If it requires a strong man to exert a pressure of 250 lbs. evenly distributed over the surface of a chimney top (one side) to push it over, how strong a wind pressure will be required to push it over?

Ans. If to push over a chimney top requires a strong man to exert a pressure of 250 lbs. **evenly distributed**, it will also require a wind pressure of 250 lbs., as they are considered to be evenly distributed. The corresponding speed required will depend on the area of this chimney top. If it be 6 ft. wide and 10 ft. high a wind of 35 miles an hour would exert a pressure of 240 lbs., according to the Langley coefficient.

THE JOYS OF BALLOONING

Christening of the "Cleveland"

By Mrs. J. C. Hamilton.

If I could do anything like justice to my feelings, the following experience would have some merit.

The ascension I made from the North Adams Aero Park, April 29th, and the christening with these lines:

"When boys will be boys with fun out of sight,
We say in Kentucky 'they are flying their kite';
But up in Ohio this will change soon,
To 'up in a balloon, boys, up in a balloon.'
So with this wine which I hold in my hand,
I christen this balloon the great 'Cleveland.'"

I consider one of the most enjoyable events of my life. The big airship was well started on her maiden trip before I knew it. We left the ground at 1.15 o'clock, and drifted to the west, but soon struck a southerly current.

I felt no sensation whatever, save vigoration, due no doubt to the ozone in the purified air. I could not tell when we were going up or down, or even moving.

After we had ascended some distance unconscious of the speed with which our balloon was so quietly moving, the city far below, other handy works of man became diminutive and insignificant; even the streams and railroads wore a small, serpentine aspect. At a thousand feet we struck a severe snow storm which lasted several thousand feet until we got above it into a warm current where it was clear and the sun was shining.

It was all like a beautiful dream, and, like a dream, it annihilated time and distance and finally the small things of this earth. We drifted over hills and dales, traveling about 75 miles, and the panoramic view we beheld is beyond description.

About five o'clock in the afternoon, the pilot, Mr. Stevens, found that we had a beautiful landing spot, and decided to come down, and as before, we were on the ground before I knew it. The big "Cleveland" rose to a height of 1,200 feet, and landed at White Creek, New York, near a farm house where we had dinner and were treated with generous hospitality.

In the basket besides myself were my husband, J. C. Hamilton, J. H. Wade, Jr., A. H. Morgan, and Pilot Leo Stevens.

The experience brought forcibly to mind the saying of the ancient philosopher: "On earth there is nothing great but man; in man there is nothing great but mind." And by the inventive genius of the human mind, the speed of the fastest animal has been surpassed, the power of the strongest has been minimized. He may cleave the waters of the sea with greater ease and pace than the swiftest denizen thereof, and last but not least, the mind's achievements—the eagle will soon have to turn over his sceptre and his sovereignty over the ethereal skies. Who may put a limit to the powers and the progress of the human mind? How soon may the planets and their satellites of our solar system have inter-communication? Who may be the first to convert the rays of light to messengers for us to conduct our correspondence with the inhabitants of other planets? Such fancies may soon become facts, if we may judge the future by the past.

Mrs. J. C. Hamilton Christening the "Cleveland," Stevens (left) Doesn't Like Getting Wet

On My First Balloon Ascension.

By George Otis Draper.

We gathered at The Wendell in Pittsfield. There were Glidden the globe-girdler, Comins the confident, and the present historian. We attended a lecture by Aeronaut Arnold, who told of his dip at dark in the dank sea waves, and we supped with Stevens the intrepid, who discoursed nonchalantly of experiences that should have left him gibbering in a madhouse. Such preparation as this piled on to the trembling thrills aroused by reading scared Scarritt's tale of balloonautical titivations should have brought a sleepless night; but nothing was known until Glidden rapped at the door at six-fifteen a. m.

From seven-thirty to eleven-forty-five, Stevens and a gas house corps labored untiringly to get the air craft ready. It is no small job to assemble the innumerable parts that contribute to the complete whole. So much depends upon the positive working of valve, rip cord, trail ropes, etc., that great care must be taken. The bag itself is easily torn or stretched and constant oversight is necessary. We carried rations for four possible means, intending to make Montreal, wind and weather propitious. Instruments, maps and sand bags formed the rest of our cargo. After being snapped in various heroic postures by the camera fiends, we climbed the high car and unconcernedly awaited the coming ceremony.

THE CHRISTENING.

"I christen thee Massachusetts." From the charming lips of a lovely lady fell forth these words as she showered the blushing passengers with Lawson carnations. As no such chronicle as this can be complete without the pertinent details, I now record that she wore the latest style of upset bucket hat and a beautifully fitting gown of elephants breath shade, directoire pattern. The big bag was now bursting with eagerness to ascend, and the extra sand bags were being cautiously removed. After repeating balancing and holding of many hands, a peremptory "Let go!" from Stevens, and we rose rapidly in the air.

As we flew towards happiness, a sinister gleam filled the eye of pilot Glidden as he defiantly unboxed a silver cornet and undauntedly prepared to blow. "Darn it all, my lips are dry," said our musician exasperatedly. From an emergency pocket came forth a flask of blackberry juice and then from the funnel of the instrument came forth most dulcet melody (most of the time). Perhaps they never heard, and perhaps it was just as well, for we now understood why Glidden sought the silence of space so frequently there to commune with the soul-lifting strains that shyly lurk within the turns of the trumpet. For twenty minutes Comins and the writer worked untangling some three hundred feet of trail rope.

Pittsfield was now far to the northwest. We followed above the railroad through Chester and Huntington, then veered off towards Holyoke. We crossed the Connecticut just above Springfield, and then turned abruptly and sailed directly over the city about 7,500 feet in the air. Since starting we had heard no noise but that of the rumbling trains. At a 25-mile gait we entered Connecticut and explored a region that could not be easily deciphered on our route map. While about 2,000 feet up we had a queer experience, the balloon suddenly rising rapidly without loss of sand or change in clouds. Up we went to 9,000 feet, and would have gone yet higher had not Glidden opened the valve. The day had been fine and the air clear. A little ring of clouds surrounded us at the 7,000 foot level, but at considerable distance.

Several times we yelled to staring countrymen enquiring the locality, but their answers did not reach us until we came nearer the ground later in the afternoon and learned we were over Brooklyn, Conn. Near four o'clock the ropes got dragging on the ground, and as we were getting short of sand we looked for a possible landing. Ahead of us we saw a mill pond, a further field, and a railroad. We slowly passed over the pond and hoped to cross the tracks when the wind suddenly shifted, and with considerable force drove us rapidly towards a farm. We got over the buildings without hitting them with the trailers, and then, with acres of open country, gently alighted on the top of a small tree of a line that crossed the fields where the farm road ran between. The car touching the top of the tree, lightened the load, and the balloon rose again to drop in the field, the trail ropes serving little purpose in checking our progress—the anchor failing to catch. As we struck we turned, and dragged about fifteen feet. I realized that Comins weighed fully 202 pounds—for he fell on me. Glidden had pulled the rip cord, and the bag spread flat ahead of us. I only thought what a fool I was not to have taken off my glasses, but no harm was done.

In just one hour and ten minutes, with the aid of the villagers of Wauregan, the balloon was dissected and packed ready for shipment. We had been in the air just four hours and forty minutes, and travelled ninety miles air line. Wauregan is a part of Plainfield, Conn., and we took train for New London, reaching Boston at ten. This was Charles J. Glidden's twenty-seventh voyage. After touring by automobile in every corner of the earth he now searches for the best route to heaven. Mr. Frank B. Comins, vice-president of the Aero Club of New England, had made an exciting previous trip, and the author had once been up in a captive balloon. As a novice he noted as peculiar the way the course could be followed and the speed judged by watching the moving shadow on the ground or looking at the end of the trail rope. There was no unpleasant sensation of any kind. The locality is best determined by noting the shape of the lakes as compared with the map. The stillness of the upper air is a feature and the change in temperature of course perceptible. I would suggest for consideration the adoption of a rope or hand hold at the bottom of the basket, so that passengers can cling to the bottom with security should the basket tip and drag. To the writer the charm of the trip was much enhanced by the uncertainty. It is pleasant to be surprised and carried unknowingly into new territory. The machine driven aeroplane of the future may have its advantages, but not all of the romance of the wind-borne balloon. Those of us who ran automobiles in the early days miss greatly that delightful perplexity and resourceful necessity which the perfection of the present type has now outlawed. There is really nothing like it; one cries for more. It is bound to be popular, and it need not be dangerous. The uplift to the senses in being above the world is necessarily stimulating and valued in recollection. May the historian have many more trips to record!

Mrs. L. J. Minahan Christening "Massachusetts"— President Minahan Sees That She Doesn't Go Up

The First Trip of the "Phila. II"

By Dr. Thomas E. Eldridge.

The christening and ascension of the big balloon "Philadelphia II" at Point Breeze on Saturday afternoon, May 29th, marked the opening of the season for ballooning in Pennsylvania. The weather was ideal, and a large company of invited guests gathered to witness the ceremonies that are always of an interesting character when conducted under the auspices of the Philadelphia Aeronautical Recreation Society.

When the new bag was inflated by Stevens it was readily recognized that the balloon was of A1 character. The material, the construction, and the decorations were all that could be desired, and many congratulations were bestowed upon Mr. Stevens by the various members of the society.

"All is ready," said Mr. Stevens; then Dr. Thos. E. Eldridge, the president of the society, presented to Mrs. Lillian Clark a pretty basket decorated with the society's colors containing the christening bottle, which Mrs. Clark broke over the anchor and said, "I christen thee Philadelphia II."

After the christening, Miss Lillian Abrahamson presented Mrs. Clark with a large bouquet of American Beauty roses, which she in turn distributed among the ladies present; after this, Mrs. M. E. Lockington, the secretary, presented to Dr. Eldridge and Dr. Simmerman on behalf of the ladies of the society a large leather mail-pouch for the purpose of carrying the instruments used in ballooning. After this presentation, Dr. Geo. H. Simmerman, the vice-president of the society, on behalf of Dr. Eldridge and himself, presented to the society the new balloon which had been jointly purchased by them. The balloon was accepted on behalf of the society by Miss Elva M. Neville, the society's second vice-president.

Then, amidst the cheering of hundreds of friends, Mr. Stevens, who had charge of the inflation, started the new balloon adrift. After a run which was made in 75 minutes, a very successful landing was made at

(Continued on page 38)

TALKS WITH INVENTORS.—I

By F. O. Andreae.

PATENT ATTORNEY.

Inventors, as a rule, are not familiar with the requirements of patent law, and on that account immensely timid. They hide their light under a bushel at a time when it would be more profitable to come out into the open and let all men see their good work.

There is a period when an inventor should observe secrecy. This period ends as soon as an application for patent has lawfully been filed.

ASCERTAINING OF VALUE OF A DEVICE.

Before spending money on patents, be sure you have invented not only something new, but something useful, for which there will be a profitable demand. Be very sure your ideas are sufficiently developed. Do not deceive yourself as to merits. Consider the facilities for manufacturing, costs, materials and all the conditions surrounding the trade to which your invention belongs. In short, criticise the product of your skill from every point of view, as would a stranger.

Having determined that the invention is a **real** improvement upon existing devices—and only, if this is the case—the inventor should proceed to make an application for patent. If his judgment as to the value of the invention is correct, the expenses involved are a reasonably safe speculation.

Anyone who desires to obtain a patent should, first of all, ascertain if his invention is new and capable of being patented. This preliminary examination by a competent attorney to ascertain the novelty of a device is called a search, and usually costs five dollars.

Do not expect your attorney to tell you that your invention is **not** practicable. He can only advise you on legal points, and secure for you all the rights to which you are entitled, irrespective of practicability.

Experts in the line of your invention can **help** you to arrive at a conclusion on this point, and from what they say, you can form an idea as to prospective profits. However, very frequently really meritorious devices have been turned down by those considered to be at the very head of the arts to which the improvement belonged. Therefore, let yourself be the judge; **you** must decide **after** considering carefully outside opinions.

The expenses of filing an application for patent are $45 in a single case. This includes the government filing fee, drawings executed in accordance with the provisions of the law, and attorney's fee for preparation and prosecution of the case. The filing ot an application for patent should end the period of secrecy. Your foreign rights are fully reserved for a period of twelve months* by international reciprocity conventions. The advantage of this provision is obvious. During this year of grace the inventor should endeavor to confirm his belief in the merits of his invention.

The first official action on his application by the U. S. Patent Office in Washintgon may furnish him valuable guidance, and he should insist that his attorney supply him with a copy of the correspondence. From this the inventor can form an opinion as to possible infringement upon the rights of others. Free conversation with men familiar with the practical side of the art, consultation with manufacturers, public exhibitions of models and comparison with similar inventions, as well as the comments of the press, especially if adverse, may assist you to arrive at a true valuation of your invention. You may be saved the further useless expenditure of securing and maintaining foreign patents.

If your device **is** valuable, the expense of obtaining protection abroad is fully warranted, and must not be neglected, but inventors should inform themselves as to the yearly taxes which most foreign countries impose upon patent rights. At the end of twelve months after filing an application for patent, the right to secure **valid** patents abroad becomes impaired.

PUBLICATION OF DESCRIPTIONS.

Publication of an illustrated description of the invention after an application of patent has been filed will do no harm. The inventor has secured for the time being all the rights and protection the laws of the **world** can give, and with confidence can proclaim himself the inventor. It is well that **everybody** should come to know he is the inventor, and not somebody else. Publicity will decrease the risk of being robbed, and adequately place his invention before the public.

No correct idea as to the time required to obtain the granting of a patent by the United States can be given. Sometimes delays are unavoidable. Sometimes they are undesirable. For example, the Wright Brothers patent was filed March 23, 1903, and issued May 22, 1906, over three years later.

A final government fee of $20 is payable within six months after the patent is allowed. There are no further taxes during the seventeen years following, which constitute the life of the patent, on which there can be no renewal.

A few words regarding the requirements of an application for patent may be of service.

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* There are unimportant exceptions.

(Continued on page 88.)

LATEST WRIGHT PATENT.

The last patent allowed Wilbur and Orville Wright by the British patent office, No. 24076, application of Nov. 10, 1908, is of particular interest on account of the fact that it covers the application of anterior surfaces, or "wing tips" to aeroplanes for lateral stability. If the Canadian Aerodrome Co., in Nova Scotia, use wing tips in their machines as in the "Silver Dart," there may be some legal developments. This patent is really precedent to that treated in the April issue of this magazine.

The use of the vertical rudders illustrated herewith is for the purpose of correcting the tendency of the machine to swerve from a direct path when the surfaces are flexed to maintain even keel.

In a flying machine comprising horizontal planes, the lateral balance is regulated by increasing the angle of incidence on the side which tends to descend and by decreasing the angle on the side which tends to rise, while avoiding the consequent rotary movement of the machine about a vertical axis by employing vertical rudders to produce a couple rotating in the opposite direction. To oppose the above rotary movement of the machine about a vertical axis, vertical rudders are arranged at the front and rear of the machine, and a fixed vertical surface at the front, and these rudders are set so as to compensate the injurious couple produced by the deformation of the wing.

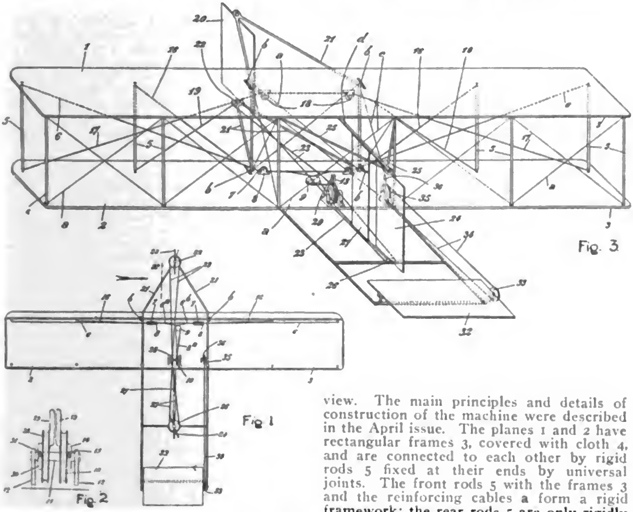


Fig. 3

Fig. 1

Fig. 2

Fig. 1 is a horizontal section; Fig. 2 a detail of mechanism; Fig. 3 a perspective view. The main principles and details of construction of the machine were described in the April issue. The planes 1 and 2 have rectangular frames 3, covered with cloth 4, and are connected to each other by rigid rods 5 fixed at their ends by universal joints. The front rods 5 with the frames 3 and the reinforcing cables **a** form a rigid framework; the rear rods 5 are only rigidly connected near the centre of the machine by the cables **a**; stretched cables **c**, near the centre, complete the rigid connection between the two planes. At the ends of this rear central rigid portion are mounted joints **b**; the parts of the frames beyond these joints may be "warped" by the cable 6 fixed to the rear corners of the upper plane and passing under guides 7 supported on bearings 8; traction is imparted to the cable by an auxiliary cable 8a, fixed to the cable 6 at 6a and 6b, and carried by a guide 9 on to a drum 10 mounted on a shaft 11 carried by brackets 12. The drum is provided with a handle 13 and can be held stationary on the shaft 11 by a brake consisting of a split collar 14, a milled screw 15 regulating the friction between the collar 14 and the shaft 11. Auxiliary cables 16 are fixed to the cable 6 and the rear edges of the planes to prevent them from bulging. The cable 17 is fixed to the rear corners of the lower plane, passing over guides 18, and provided with auxiliary cables 19. In this manner is formed a rigid, yet deformable, framework.

To overcome the rotary movement of the machine about a vertical axis that would ensue from deforming the wings a vertical rudder 20 is fixed to the rear of the machine, moving on an axis mounted between arms 21; at the lower part of the axis is mounted a pulley 22 round which passes a cable 23 permitting the rudder 20 to be turned so as to obtain a pressure of air on the rudder on the side of the machine the wing of which has the smaller angle of incidence. A second vertical rudder 24 moves on an axis mounted on arms 25 in front of the machine. The crossed cable 23 passes round the pulley 26, thus turning the two rudders in opposite directions. The rudders are worked by the cable 23 passing over a drum 28 mounted on the shaft 11, and provided with a handle 29 situated close to the handle 13 so that both can be grasped with one hand. The drum 28 is provided with a friction brake consisting of a split collar 30 and a milled screw 31.

"It is known that the centre of pressure on aeroplane rudders does not maintain a fixed position for all adjustments. It is impossible, therefore, to hinge the rudder so that it will always be in balance. The pressure will sometimes assist and sometimes oppose the adjustment of the rudder by the operator, especially when passing the dead centre, and make accurate adjustments difficult. We have therefore introduced a friction between the operator and the rudder, so that the operator will be compelled to overcome resistance in making all adjustments. The amount of the friction is therefore preferably regulated to be greater than the disturbing forces produced by the pressure of the rudder, but less than that at the command of the operator for making adjustments." A vertical fixed vane 27 is mounted on a cross-bar d between the arms 25; it acts with the rudders; in case one of these is more powerful than the other, it assists the more feeble one to form a turning couple; in case one of the rudders is disabled it maintains with the remaining one a turning couple in the original direction. The horizontal rudder 32 is arranged in front; its axis carries a pulley 33 on which is wound a cable 34 passing over a drum 35 actuated by a handle 36 and fitted with a friction brake. Finally, instead of the rear portions of the wings being deformed, movements may be imparted to the anterior parts of the wings. In a general way the object of this invention is the balancing of these machines by the combination of horizontal surfaces movable at variable angles of incidence arranged upon the right and left hand sides of the machine with vertical rudders and vertical fixed surfaces.

Following are the nine claims to the specifications, in full:

"1. In a flying machine, the combination with a single or multiple aeroplane having lateral portions capable of being adjusted while in flight to different angles of incidence on the right and left sides of the machine, of a vertical adjustable front rudder and a vertical adjustable rear rudder.

"2. In a flying machine, the combination with a single or multiple aeroplane having lateral portions capable of being adjusted while in flight to different angles of incidence, of a vertical adjustable rudder and a fixed vertical vane co-operating therewith to form a turning couple.

"3. In a flying machine, the combination with a single or double aeroplane having lateral portions capable of being adjusted while in flight to different angles of incidence, of vertical adjustable front and rear rudders and a fixed vertical vane mounted between the said rudders.

"4. In a flying machine, the combination with a single or multiple aeroplane and means for moving while in flight the right and left portions of the said aeroplane to face forward at different angles of incidence, of vertical rudders mounted in the front and rear of the said aeroplane, and means for simultaneously actuating both said rudders and said aeroplane.

"5. In a flying machine, the combination with superposed aeroplanes having a rigidly connected central portion and a guide or guides carried by said aeroplanes, of a cable secured at its opposite ends to the opposite lateral portions of the upper aeroplane and engaging the guide or guides carried by the lower aeroplane, and a second cable secured at its ends to the opposite lateral portions of the said lower aeroplane and engaging the guide or guides on said upper aeroplane, whereby one of the said cables is actuated to move one of said lateral portions of one of said aeroplanes downward, the opposite lateral portion is moved upward and vice versa.

"6. In a flying machine, the combination with superposed connected aeroplanes, of a cable secured at its opposite ends to the opposite lateral portions of one of said aeroplanes, a guide carried by the other of said aeroplanes and adapted to engage said cable, an auxiliary cable connected at one end to said cable intermediate said guide and the point of connection of said cable with said aeroplane, and at its other end to said first-mentioned aeroplane at a point removed from the point of connection of the main cable to said aeroplane.

"7. In a flying machine, having tips adjustable to the aeroplanes and adjustable rudders, with means for operating the same,

(Concluded on page 19)

GOVERNMENT BALLOON EXPLODES.

Capt. Chandler and Lieut. Ware Have Narrow Escape.

After a trip of 83 miles on May 10th, the Signal Corps balloon "No. 12" exploded almost at the moment of touching the ground.

The silk and rubber fabric balloon had a capacity of 19,000 cubic feet, and was made in France. This ascension was its first, and was the first to be made from the new balloon shed and hydrogen gas plant at Fort Omaha, just completed. The balloon had been in course of inflation for three days awaiting favorable weather. A six-mile wind was blowing when Captain Charles De F. Chandler and First Lieutenant James E. Ware stepped into the basket. Later a speed of 22 miles an hour was held for a while. after the aeronauts were almost becalmed for several hours. Photographs were taken and thermometer, barometer, etc., readings were kept during the trip for reference. The highest altitude was 4,400 feet, with a temperature of 39 degrees. Straight line distance, 83 miles.

On landing. the explosion came, setting fire to the envelope and completely destroying it. The detonation could be heard for several miles. In the hurried exit from the basket, Lieutenant Ware, who was crouched in the basket and facing the bag, received some facial cuts, but Captain Chandler, facing from the balloon, was unhurt. The basket and instruments were unharmed.

CAPT. CHANDLER TELLS OF ACCIDENT.

In his official report to the Adjutant at Fort Omaha, Captain Chandler states:

"After passing over Homer, Neb., the course soon carried the balloon clear of the rough ground and over the flat lowland plains of the Missouri River valley, and at 6:17 p. m. the valve was opened (height, 3,112 feet), and descended to make a landing. Wind velocity latter part of the trip scaled off from map, and time of passing over known points was 22 miles per hour. This rapid descent was necessary, because a lake and the Missouri River lay directly ahead of us. While descending, the rip cord was taken out of its sack and hung down beside the pilot ready for use, but just as the guide rope neared the ground. the end fouled around a telegraph or telephone line and stopped the balloon with a jerk which threw me off my feet and also threw the rip cord out beyond reach from the car. The guide rope soon released itself and the anchor was dropped. It bounded along the ground across a small field and caught in a wire fence. The valve was opened before catching the fence and was held open. The force of the wind was sufficient to break the appendix ropes, which allowed the balloon to parachute, but the anchor held, and very soon it was noticed that almost half the gas was out. While in this situation, the car settled down gently to the ground twice, rising a few feet again each time, but the gas bag did not get near the ground until after the car picked up the second time; then a gust of wind swung the half-empty envelope down toward the ground and the gas exploded and burned. The report was heard several miles. The force of the explosion broke the loading ring into three parts, tore the balloon into pieces, broke the valve and many of the ropes near the loading ring. The explosion ignited the envelope, and it was completely consumed, together with most of the net.

"At the time of the explosion of the gas, Lieutenant Ware and I were down low in the car holding the valve open, and thereby protected somewhat from the flame, but the force was sufficient to knock us and the car over, resulting in several bruises on each of us, the most serious being small cuts on the forehead and around the eye of Lieutenant Ware. (Lieutenant Ware was facing the bag.) The back of my head struck something and stunned me, but I regained consciousness in a few moments without assistance.

"The ignition of the gas was probably caused by a static discharge between the balloon and the earth as soon as the envelope came near the ground. The envelope of balloon No. 12 was made of silk and rubber fabric, and at 3,000 feet altitude might have acquired a static charge of electricity of different potential than the earth, retaining it during the rapid descent; or perhaps the charge was acquired on account of the friction of the air against the silk during the rapid descent. There were no other people within 75 yards of the balloon at the time of the explosion, and it is not apparent how the gas could have ignited from any other cause than an electric spark. There were no flint rocks, stones, metal or timber where the bag exploded; therefore, it was impossible to have received spark from friction of two bodies striking together. Landing was on freshly plowed ground.

"To avoid similar accidents in the future, it is recommended that before making a landing (silk envelopes especially) balloons be maintained at a low altitude as long as practicable before touching the earth, so that any static charge would have some chance to be dissipated. Perhaps the object could be accomplished by carrying a loop of light flexible wire over the gas bag and connecting both ends of the loop to a small flexible wire woven into the guide rope, thereby allowing the spark to pass to earth at a safe distance below the inflammable gas."

An order has been given for a 540-cubic metre balloon to take the place of the one destroyed at Fort Omaha. Nebraska.

Ft. Omaha is becoming the principal army balloon rendezvous, and the dirigible and other balloons have been sent there. Several officers, some from the Signal School at Fort Leavenworth, are attending there for a course of instruction. Lectures will be given.

The plant for manufacturing hydrogen in use at Fort Omaha is the most fully equipped in the world. A heavy current of electricity is passed through water, disintegrating the fluid into its component parts, the hydrogen being liberated and passed into a gas receptacle, from which it is piped into the balloon.

OTHER ACCIDENTS OF LIKE NATURE.

April 26, 1903, the German balloon "Passewitz" was burned on grounding, and the phenomenon is noted as an electrical one. (See "Au Fil du Vent." Paris, 1909, page 296.)

Another catastrophe, apparently identical, took place at Civitacastellano, Italy, in March, 1906. The balloon in this instance exploded on reaching the ground, due to the fact that the balloon came down from a great height charged with electric potential acquired in the clouds, so that it exploded as it touched the ground.

Powdered aluminum has been used in Italy for the past twelve years, and triple advantages are claimed for it: preventing the cloth from being electrified; affording the cloth a semi-incombustibility; maintaining the hydrogen at a low temperature. (See July and August, 1908, issues for full discussion of this subject; also p. 130, March, 1909.)

Lahm and Foulois to Operate Wright Machine.

Gen. James Allen, Chief Signal Officer, has designated Lieuts. Frank P. Lahm and Benjamin D. Foulois as the student officers who are to be taught the art of manipulating the Wright aeroplane. The contract requires that the two officers be instructed how to pilot the aeroplane. The two officers, after attaining proficiency, are expected to act as tutors to others.

Herring Delivery Postponed.

A. M. Herring was allowed to waive delivery of his aeroplane on June 1st, as he claimed that two of his foreign patents would be invalidated by an exhibition of his machine prior to June 15th. He promises to fulfill his contract by July 1st, the limit set at the time the last extension was granted.

The Wrights are due to begin flights at Washington on June 21.

Dirigible No. 1.

Signal Corps Dirigible No. 1 was overhauled and inflated with hydrogen gas in the Balloon House, Ft. Myer, Virginia, for a thorough test before being taken out for flight. A heavy rain and wind at this time damaged the balloon tent, necessitating its being taken down, consequently no flights were made. The dirigible was deflated a few days later, and shipped to Fort Omaha, Nebraska, for aeronautical instruction and demonstration at that post.

Second Lieutenant John G. Winter, Jr., 6th Cavalry, was assigned to duty in the Aeronautical Division.

The balloon detachment and four officers assigned to duty in the Aeronautical Division, in charge of First Lieut. Frank P. Lahm, Signal Corps, have been transferred to Fort Omaha, Nebraska, on temporary duty, to operate Signal Corps Dirigible No. 1.

On May 26th, Lieut. Lahm, pilot, and Lieut. Foulois, made a flight in it at Fort Omoha, manoeuvering at will.

The demonstration before the officers and men of the 1st and 2nd Companies of the Signal Corps, N. G. N. Y., and a thousand interested spectators in the 71st Regiment Armory, New York, by A. Leo Stevens, was a great success. Mr. Stevens gave an illustrated lecture, and under his direction the Aeronautic Squad inflated one of his balloons. When the Signal Corps goes to camp this year, it will have practical lessons in ballooning. It is rumored that Mr. Stevens is to present the Corps with a balloon.

This demonstration was preceded by a visit to the Stevens' factory by several members of the Aero Squad.

The famous old "United States," which was bought last year by Dick Ferris of Los Angeles and has been the medium for some exciting ballooning in California since then, has been sold by Mr. Ferris to Park A. Van Tassell of Oakland. Mr. Van Tassell, who has been making balloon ascensions in California for 22 years, has equipped a balloon park in Oakland from which he will make ascensions with the "United States." The "American," which was taken west by Mr. Ferris last year, is now owned jointly by him and Mr. J. B. Lehigh of Los Angeles, and will be retained in that city.

CLUB NEWS

The Aero Club of St. Louis has leased a plot of ground for the proposed aero meet on Oct. 4, and has arranged for piping, etc., for gas for the racing balloons. The appropriation committee of the Centennial Celebration has donated $10,000 towards the meet, and has set aside three days for the races and contests. On Monday, the 4th, the long distance balloon race will be started with probably twenty contestants; Friday and Saturday the contests between dirigible balloons and flying machines.

The annual meeting of **The Aero Club of California** held June 1st in Los Angeles. The following are the officers elected: President, H. Lav. Twining, A. L. Smith, E. A. Murch; first vice-president, E. J. Campbell, A. L. Smith, Geo. W. Throop, W. B. Cannon; second vice-president, E. L. Graves, J. H. Klassen, W. L. Wiggins; secretary, Parke Hyde, E. L. Graves, J. T. Dickson; treasurer, E. W. Murch, Geo. W. Throop, W. B. Cannon.

GROUNDS FOR WASHINGTON CLUB.

The Aero Club of Washington.—Incident to the commencement of activities by the Aeronautical Division of the Signal Corps, the Aero Club of Washington is showing every indication of future progress. The enthusiasm aroused at the second meeting of the club, held at the residence of Dr. Alexander Graham Bell on May 13th, should be an inspiration to other organizations of this character. The Washington club has come to realize the splendid opportunities which it has, as well as the important responsibilities it has assumed; but better still, men of influence and position residing in the nation's capital are becoming greatly interested in the club.

The meeting was called for the purpose of electing a president, former Secretary of the Navy Newberry having declined to serve because of his European trip, which keeps him away from Washington. Thomas F. Walsh, one of the best known citizens of Washington, and famous for his silver mine holdings, was elected to fill the vacancy.

Consideration of plans for co-operating with the Aero Club of America in connection with the presentation of the gold medals to the Wright Brothers at the White House on June 10th occupied the attention of the members. Dr. Zahm, the secretary, read several communications from the New York club giving the details of the program. It was decided that the club should give further consideration to the matter at another meeting.

Gen. Robert Shaw Oliver, Assistant Secretary of War and vice-president of the club, presided at the meeting. He especially urged that the club secure suitable grounds where flights can be made. Dr. Bell suggested that there are many practical men in the various governmental departments in Washington who would like to belong to an aeronautical society where they could have the benefit of the encouragement and assistance which such a society could afford. He suggested that the dues of the Aero Club, which are fifteen dollars, including the initiation fee, are too high for these men. It was then suggested that a scientific branch of the club could be formed for the purpose Dr. Bell had in mind. A committee of the Board of Governors has this matter in charge.

Dr. Zahm announced the appointment of several sub-committees of the Board of Governors to take charge of various matters. He said that the membership of the club is now between forty and fifty, but that it is expected within a short time the full number of charter members, one hundred, will have joined.

That the club should purchase an aeroplane was the suggestion made by Dr. David Fairchild, of the Department of Agriculture. Henry Wadsworth proposed that modeds of flying machines and photographs should be obtained for the use of members. Lieutenant Frank P. Lahm, of the Signal Corps, discussed the practicability of purchasing a balloon for free flights, and suggested that by means of a nominal charge for ascensions the balloon would soon pay for itself.

Asserting that the Fort Myer drill grounds do not offer sufficient space free of obstructions for experimental flights and for the teaching of officers in the handling of aeroplanes, Gen. Allen said that the Signal Corps is endeavoring to obtain more suitable grounds for an aerodrome near Washington. Indian Head, on the Potomac River, and within easy access of Washington, is being considered. Otto H. Tittmann, superintendent of the Coast and Geodetic Survey, said that he would endeavor to aid General Allen in locating a suitable place for the proposed aerodrome.

The announcement made by Gen. Allen is particularly significant, because he said that the grounds would be open to the Washington Aero Club for use in connection with its experiments. It is to be hoped that this aerodrome will become as popular with aviators as is Issy-les-Moulineaux near Paris. The Board of Governors of the club will take up the various suggestions made at the meeting by the members.

Those present were:

Dr. David Fairchild and Mrs. Fairchild, Mrs. Emmons, Dr. Alexander Graham Bell, Gen. Robert Shaw Oliver, Dr. Albert F. Zahm, Charles J. Bell, Edward McLean, Prof. Harry C. Frankenfield, Dr. J. Wesley Bovee, Otto H. Tittmann, Gen. A. W. Greeley, Prof. Wm. J. Humphreys, Geo. O. Totten, Willis Moore, Brig. Gen. James Allen, Major Geo. O. Squier, Lieutenant Frank P. Lahm, Lieutenant Butler, Henry Wadsworth, C. H. Claudy, M. D. Porter, and Jerome S. Fanciulli.

The Philadelphia Aeronautical Recreation Society had a drawing for the next ascension, so eager were the applicants. In accordance with a rule of the society, the names of the fortunate women will not be made public. The pilot of the Philadelphia II on this occasion will be Dr. Thomas E. Eldridge, the newly elected president of the society.

The annual meeting has just been held. Doctor Eldridge succeeds himself as president. The other officers, all re-elected yesterday, are Dr. George H. Simmerman, Miss Elva M. Neville, Dr. Ely S. Beary, vice-presidents; Thomas Rose, treasurer; Mrs. M. E. Lockington, secretary, and Miss Mary Carnell, official photographer.

The Aero Club of Dayton has arranged with G. L. Bumbaugh to go to Dayton in June and take some of the members ballooning. The membership of the new club is growing rapidly.

The International Aeroplane Club has been organized in Dayton, Ohio, and starts off with a membership list of 500, amongst which are a number of prominent men of science from various parts of the country, interested in the exploitation of the aeroplane. The Wright Brothers have been elected honorary members.

The purpose of the club is to stimulate and foster scientific research in this phase of aeronautics, collect literature bearing thereon, and recognize meritorious contributions or achievements by the conferring of suitable honors.

On the occasion of their return from abroad last month, the Messrs. Wilbur and Orville Wright were given a most enthusiastic reception by their friends and townsmen, on which occasion they were presented with a laurel wreath containing a design depicting Mercury invested, by the genius of the Wrights, with a beautiful pair of wings in addition to those bestowed upon him by the gods of mythology, flying through the clouds, a section of the earth being shown below, and the following quotation from Keats appearing in the center:

"Only the sward
He with his wand light touch'd,
And heavenward, swifter than sight was
gone."

It was this occasion which furnished the inspiration that led to the organization of this club.

Plans are being laid for the club's participation in the "Wright Celebration," to be held here on the 17th and 18th of this month, which promises to be possibly the most magnificent affair of its kind ever attempted by any municipality.

Those interested can obtain application blanks by addressing A. E. Estabrook, International Secretary, International Aeroplane Club, Dayton, Ohio.

The Pacific Aero Club has been organized in San Francisco with the following officers: President, J. C. Irvine; vice-president, C. C. Bradley; secretary, Cleve T. Shaffer; treasurer, J. N. Masten; board of directors, Prof. Bruno Heymann, A. Lowell Eisner, Prof. Joseph Hidalgo, F. J. Harrington and Prof. Geo. A. Merrill.

The club is formed of local enthusiasts who are devoting their leisure time to the study of aerial navigation, many of them having machines in the course of construction. The members believe that they will be able to interest a sufficient number of people to form the largest aero club on the Pacific coast, and offer prizes to the makers of the latest type of flying machines.

The formation of the club has certainly livened up aeronautics in San Francisco, and the membership is increasing daily. The newspapers are giving the necessary publicity to the club's meetings, and public opinion seems to be changing from the synical apathy that has characterized it—due to several failures of the Morrell type. A unique plan to stimulate a practical side to the interest of the members that do not own machines or balloons, is the giving of a prize by Prof. J. Hidalgo for models, which are inexpensive to make and at the same time give an idea of the problems to be met with in a large size machine.

California Balloon Club.—This club has been organized by a number of Californians primarily to encourage ballooning as a sport in this state, and to set before eastern balloinists the advantages of touring and winter ballooning in California. The club is designed to aid in every way the regular aero clubs, not in any way to interfere with their progress.

In a communication to the Pacific Aero Club the latter was asked to name the vacancies in the following directorate of the Cal. Balloon Club: President, Dick Ferris, Los Angeles; vice-president, to be named by Pacific Aero Club; vice-president, T. C. S. Lowe, Pasadena; vice-president, A. L. Crane, Sacramento; secretary, Geo. B. Harrison, San Francisco; treasurer, to be named by Pacific Aero Club; consulting engineer, Roy Knabenshue, Sierra Madre, Cal.; board

(Continued on page 38.)

CURTISS FLIES AERONAUTIC SOCIETY AEROPLANE.

"The Finest Machine" Now at Morris Park.

New York, June 11, 1909.

Successful trial flights have been made with the aeroplane built by G. H. Curtiss at Hammondsport, for the exhibition of the Aeronautic Society. After the first two flights some minor detail changes were made, and then two flights of half a mile and a mile and a half each were made. The following morning two more flights of two miles each in a figure eight were made. The new machine is very speedy, the trials being at 45 miles an hour.

The machine is now at the Morris Park grounds of the Aeronautic Society, where Mr. Curtiss will fly at the Society's exhibition.

A biplane, the surfaces have 29 ft. spread, 4½ ft. front to rear, with the same distance between. There are only 260 sq. ft. of supporting surface and the weight, including the aviator, is but 550 lbs. The framework is of Oregon spruce. The curved ribs are laminated. The surfaces are made of Baldwin rubber silk stretched to the tightness of a drumhead. There is a horizontal control surface containing 24 sq. ft. placed 10 ft. in front of main plane and a smaller adjustable horizontal surface 10 ft. in the rear. A double front rudder is also used, if desired, but either one is ample for vertical steering. The rear horizontal rudder halves a vertical rudder of about the same area. The machine is carried on three specially constructed 20-in. pneumatic-tired wheels. The front wheel is fitted with a brake to stop the machine quickly after landing. Stability is secured by movable surfaces at either extremity of the main planes, each movable surface being half within the main cell and half without.

Driven direct is a 6-ft. aluminum propeller giving a thrust of 225 lbs., though 150 lbs. is enough with which to fly.

The operator sits in front of a Livingston radiator, behind which is the engine. Pushing out or pulling in the steering wheel steers up or down. Turning the wheel right or left steers in the same directions. By bending the body left or right as the machine heels over, operates the stability planes through cables attached to a curved rod closely fitting around the shoulders of the aviator.

DESCRIPTION OF NEW CURTISS ENGINE.

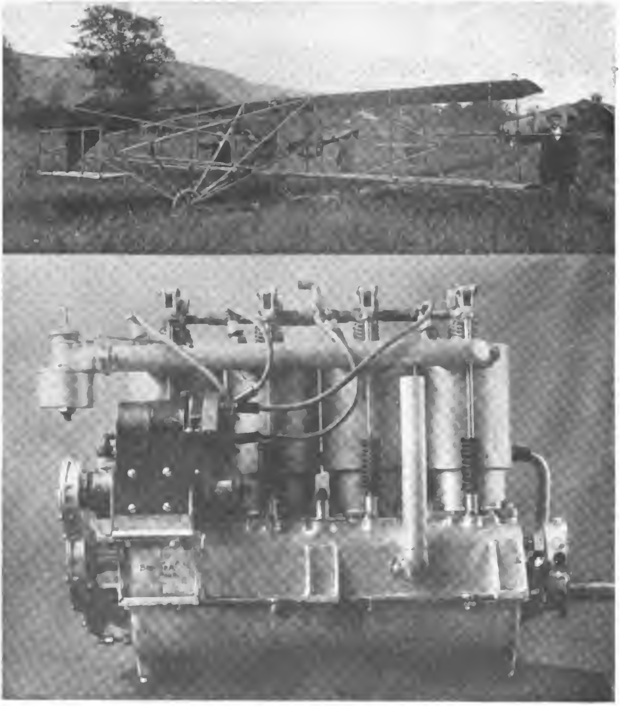
This engine is of the new Curtiss type, four-cylinder vertical water-cooled by force pump, 3¾ bore and 4-in. stroke. The cylinders are cast iron with copper jackets homogenously welded on. Lubrication is by a force feed system, the pump being built in the case and operated from the cam shaft, the oil being fed through the hollow cam shaft to the main bearings and thence to the hollow crank shaft to the crank and connecting rod bearings, the overflow from the case returning to a separate reservoir underneath the engine, from where it is again pumped through the system.

The crank case is of special aluminum alloy and the shafts are of Vanadium steel. The valves are both in the head and are actuated by single-push rod and cam. All of the parts of the motor are made of special materials secured expressly for this engine. The weight, including the oil and water pumps, is 85 lbs. Ignition is regular by Bosch magneto weighing 12½ lbs., driven by enclosed gears. The engine develops 25 h.p. at 1300 r.p.m. and has a maximum speed of 1800 to 2000, at which it develops considerably more power. The engine is built for long and hard usage, the bearings are of liberal dimensions, and the lubrication and cooling system is very complete. The motor has proven efficient in a ten-hour test.

Mr. Curtiss states: "We have been informed by good authority that this motor develops more power per square inch of piston area than has ever before been secured from a gas engine. We claim that it is the lightest practical motor built. A similar engine of eight cylinders is under way."

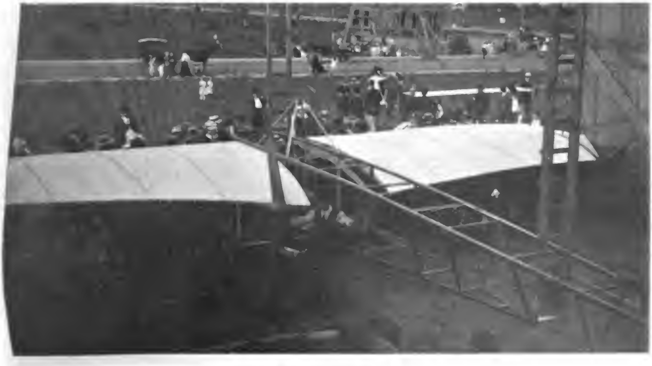
The Beach-Willard Monoplane.

Our photograph shows latest aeroplane to be built by a member of the Aeronautic Society. This new monoplane has been constructed lately at the grounds of the Society at Morris Park by Messrs. Stanley Y. Beach, Aeronautical Editor of the "Scientific American," and Charles F. Willard, an engineer. The machine is patterned after the Bleriot and Antoinette monoplanes, it having a square body frame at the front end and a triangular frame at the rear. (Mr. Beach holds patents covering the application of planes or wings to a triangular body in France, England and America.) The body framework is about one meter square at the front end, while at the rear it tapers down to about one-half meter in height. Its length is ten meters. The spread of the wings is 38 ft. and the width at the body 8 ft. This tapers to 6 ft. at the outer end. Triangular wing tips are placed on the ends of the main frame. These will be connected to the aviator's body, so that when he sways inward in making a curve he will automatically set the wing tips in the right position to incline the machine and cause it to take the turn.



The Curtiss Aeroplane and the Motor

There is a horizontal surface at the end of the body framework, the dimensions of which are 5 x 6 ft. This frame has movable wing tips 2 ft. square on each end, these tips being operated in unison by a single lever at the aviator's left hand. A vertical rudder is combined with the wheel at the rear of the body framework. Both the wheel and rudder are moved by a single lever at the aviator's right hand. A 9-ft. diameter, 9-ft. pitch propeller, of special design is located in front of the machine at the level of the top of the body framework. The motor is placed in the bottom part of the body and drives the propeller shaft by means of sprockets and a chain, the speed reduction from motor to propeller being about 2½ to 1. The motor is a four-cylinder, water-cooled, automobile type engine, of special design, having concentric inlet and exhaust valves and a high compression. It develops 50 h.p. at 1000 revolutions. The bore and stroke are 4 x 4¼ in. The motor weighs about 350 lbs. complete. The total weight of the entire machine will be about 750 lbs. complete with aviator.



The Beach-Willard Mono

This monoplane was completed May 31, and was exhibited at the Aeronautic Carnival at Arlington, N. J. that day in competition for a prize of $500 offered for the best designed and constructed aeroplane, but contest was closed a half hour before the Beach monoplane arrived, the prize being awarded to the triplane of M. Bokor. Mr. Beach has protested the award and it is probable that the lists will be reopened. In order to take the monoplane to New Jersey, Mr. Beach placed it upon his automobile. With a total dead weight of about 1,600 lbs. the machine made the trip over New York City and over the rough roads leading to Arlington—a distance of 50 kilometers—in good time and without mishap. The machine was brought back in a similar way.

Myers Airship.

The airship which Carl E. Myers has sold to the Society is one of his regular "pocket editions." The bag contains 7,500 cu. ft. of hydrogen gas, is 55 ft. in length and 18 ft. in diameter, in a regular symmetrical curve from front to rear. The fabric is cotton machine varnished seven times with a final weather coat put on by hand after being inflated with air. The first seven coats are put on before the cloth is sewed. Over the bag is a close-fitting net, with merely the extreme points of the bag not covered thereby. These points cut the air at a very sharp angle.

The frame consists of two gunwales and a keel, forming a triangle in cross-section. The car in which the operator works is rectangular, placed midway of the frame. In the front part of the car is a Curtiss two-cylinder, 7 h.p., air-cooled motor, driving direct a two-bladed, 4-ft., wooden propeller through an ingeniously simple friction clutch. The whole frame weighs but 36 lbs. and is 39 ft. long. It disjoints at four places, each section telescoping and all going into the fifth or car section. The shaft also disjoints and is packed inside the disjointed frame, the whole frame and shafting going into a crate the size of an ordinary trunk, the engine being carried separately in a small trunk.

In front of the frame, just behind the propeller, is a small vertical surface, and in the rear is the usual vertical rudder, operated by tiller ropes. The front rudder is for use in emergency. To steer up and down, the operator shifts his weight slightly forward or backward in the car, by shifting the horizontal planes on each side of the operator, or by slight movements of the ballast carried just behind the rider.

The weight of the operator and ballast must come within 200 lbs., as that is the total spare lifting power of the little sky sailor.

The News of the Month.

The past month at Morris Park has been perhaps the most interesting in its career, although there was no flying.

The Society had again and again to postpone the date of its first exhibition on account of waiting for the Curtiss machine, and the month wore out without seeing the expected weekly displays make a start. But there has been no lack of excitement, and it was not always limited to the members.

To Mr. Kimball the first Sunday in the month was a notable occasion, which he probably entered up in his diary in red ink. For on that day he was able to prove that he had successfully solved the difficulty of his transmission. Practically every expert declared that he never would get those eight propellers agoing with the wire cable. He has won out. The introduction of a friction clutch, constructed for him by Adrian Beckert, of the Mercedes Repair Co., has removed the sudden snatch which used always to break something when the engine started, and now the whole works beautifully. During the month they have run for several long spells and there has not been the least sympton of trouble. When, on that Sunday afternoon, the eight propellers spun around for the first time without breaking, there was a goodly company of friends around and Mr. Kimball was heartily cheered.

It was an amusing occasion. Mr. Bokor was out on the track with his triplane—the machine which is now famous as the first flying machine to win in America a money prize, and the only machine on earth which has captured a big prize without flying. Mr. Kimball was out on the lawn. It became a great race between the two as to which should be the first to get into the air, and win the trophy which the Society has put up to honor that event. Mr. Bokor was the nearest ready. Then a tire came off one of his wheels. Quickly it was replaced and reinflated, and Mr. Bokor began to debate within himself as to how high in the air he should allow himself to go. But the tire went down again.

Another try. The same result. Meanwhile the two machines had got within sight of one another, and Mr. Kimball was rapidly getting all in order for the desperate moment when he would risk starting his engine. Mr. Bokor cast his damaged wheel aside and did the prettiest sprint of his life across to the workshop and begged Dr. Greene to lend him a new wheel. Just when Mr. Bokor believed he had everything as good as ready, the crowd around him heard the mighty voice of the Kimball engine and there was a rush from the track to the lawn. And then darkness came. The two machines were put back into their sheds. The crowd went home. It had been an amusing race anyway.

The next day Mr. Kimball got out and all was in good trim. The moment his machine was let go of after the engine had been cranked it whizzed up the track like a streak of lightning, turned into a bank, toppled over into the hollow below and lay there. The front rudder was wrecked, the front of the chassis smashed off, and the main frame was slightly damaged. Mr. Kimball was badly shaken up, but not much hurt though he was thrown with his back against the flywheel of his engine. Many of the onlookers were of the opinion that the front and one side of the machine got off the ground, and that that was the reason why the steering by the front wheel failed.

Ten days later Mr. Kimball was out again. One by one since then he has been conquering each little difficulty that has arisen, and has got so that he can hold the machine under perfect control. But some changes were made in the blades of the propellers, and it is doubtful whether he has ever again had the speed which he obtained on the first occasion.

Meanwhile Mr. Bokor, having lightened his triplane by discarding the wheeled chassis in favor of skids and making a little truck on which the machine was placed loose for the purpose of gaining its initial speed, made almost daily practice. He could spin down the track at fine pace. But he never left his little truck.

Mr. Beach had a staff of seven men swarming over one another round his monoplane, and working even by candle light at such a rate that they patched up about three months' work in about twice that number of days in preparation for the Arlington "carnival." On Monday morning, the last day of the show, Mr. Beach bundled the various half-completed sections of his apparatus on to an automobile, and away he sped for Jersey.

About the middle of the month Carl Myers, of Frankfort, N. Y., brought down the little dirigible he was under contract to the Society to demonstrate with the view to the Society buying it if it proved to be steerable. The making of the hydrogen gas and filling the envelope was watched with great interest. Mr. Myers' system of making the gas proved a marked success.

Everything was ready for the demonstration on Monday, the 31st. A very big crowd of spectators made their way in and were allowed to remain. But it was only for a disappointment. Mr. Myers considered that the wind was never sufficiently calm to permit of him making a successful display.

But of the fifteen members who entered for the dirigible contest, only Kimball and Grout were in attendance next day when the weather was decently still. Mr. Kimball, whose entry was the first, took the first lesson. Rob. Hopkins, Mr. Myers' assistant, coached him well. But the ascensional power of the balloon had so much decreased in the cool of the evening that it was hardly sufficient to take Mr. Kimball up together with a bag of ballast. The first time it was let go it came back very quickly, and more ballast had to be discarded. The next time it sailed up nicely. But almost immediately afterwards it got its nose downhill, and shot to the ground. Despite his perilous position, Mr. Kimball stuck to his seat, though the bump with the earth nearly knocked him off it. In striking the ground the shaft snapped just behind the propeller, and the engine, relieved of its load, raced at a frightful pace. But Mr. Kimball, quickly recovering his balance, turned the motor off. Then, as he rebounded into the air, he threw out a line, which was caught; and further experiments and lessons were postponed till next morning.

Having had the propeller shaft repaired during the night, further lessons were taken about 5 A. M. when the warmth of the rising sun had expanded the gas and made things better. Both Kimball and Grout made trips about the grounds. The bad weather that followed delayed reinflation.

The next event was the working of the Society's motor. A satisfactory magneto having been obtained, Mr. Shneider got the wheels going round in great form. Before June is very old, Mr. Shneider will be making a tryout with his machine. He has been held up by a Philadelphia firm who took several weeks to supply some bearings. But now he has everything necessary, and, at the time of writing, was fixing up his propellers.

Much progress has been made during the month with all the machines building at the Park. Dr. Greene and Dr. Walden are shaping towards completion. The Brothers Lawrence will soon begin assembling. Mr. Kickman is fixing up his outer ring of surfaces, and has hopes of soon being through Mr. Beach, back from Arlington, is redoing all the work that was hurried over.

The sheds have also received two new and interesting arrivals. The first of these was F. H. Lindsay of Chicago, a consulting engineer practising in the Windy City, who has joined the Society and come to the Park to build. He has a small and unique machine on which he is placing great hopes. It consists simply of two parallel planes of only 25-ft. spread, and will be driven with a 16-20-h.p. motor. There is to be neither front nor rear rudder. Steering is to be effected by simply manipulating the planes.

The other new arrival was W. H. Martin of Canton, O., well known to readers of this magazine. Mr. Martin is under contract to make a demonstration of gliding at the coming exhibition both by himself and by Mrs. Martin. He has brought his apparatus and is assembling it and making some alterations at the Park.

All Ready for A. S. Exhibition.

In addition to the Curtiss aeroplane, the dirigible and hydrogen plant purchased by The Aeronautic Society from Carl E. Myers is all ready for the show. The Thomas windwagon is being rebuilt for the windwagon race and Louis R. Adams will have ready another one in a few days. The Thomas windwagon will be used also for testing the propellers in the efficiency contest. Mr. Adams is working hard on his aeroplane which has some novel features. William H. Martin, Mrs. Martin and the boy will all make towed flights in the Martin glider, while Wm. H. Aitken will use a Wittemann glider in towed flight, and Charles J. Hendrickson one of his own design. Hendrickson and Aitken want to glide from the roof of the grandstand.

There will be a "hurdle race" to provide a freak event. Four contestants will have fastened to their shoulders small balloons filled with hydrogen and will race along the track and over obstacles. Those who have tried say that enormously high jumps can be made in this fashion. Three Montgolfier balloons have been engaged to go up at the same time, with parachute descents.

Drs. Greene and Walden, Lindsay and Lawrence will have their machines completed in a few days, and, of course, hope to fly for the prizes announced last month. Beach, Kimball and Shneider are all ready now for trials. Fifteen possible flyers should show up on the day of the exhibitions besides the gliders. An exhibition of kite flying will be given by S. F. Perkins and a contest will be held between the schoolboys of New York.

JUNE 26

Everyone is working hard to get ready for the show June 26. Many flying models are promised and new features are being gotten up.

SHOWS OF THE MONTH.

FIRST SHOW OF THE AERO CLUB OF CALIFORNIA—$1,000 PRIZE.

By H. La V. Twining, Secretary.

On the 1st and 2nd of May, 1909, the Aero Club of California gave its first show. This show was purely aeronautical, and taking into consideration that this was the club's first effort, it was a success.

Fourteen models were placed on exhibition, representing various types—ornithopters, helicopters, gyroplanes, monoplanes, dirigible balloons, and modifications of the Wright type.

Six entries were made for the glider contest.

Edgar S. Smith came first with his three decker. He attempted towing flights. A tow-line was attached to an automobile and he attempted to cut loose and glide after attaining the proper speed. Great difficulty was experienced owing to the limited space and to the fact that the stadium was surrounded by a large brick wall. The wind came in gusts. On one occasion he rose ten feet in the air. On another trial he was towed 75 feet free of the ground, and for 25 feet of that distance he was free from the pull of the automobile. This won for him the Leonard cup.

The boys of the Aero Club of the Los Angeles Polytechnic High School, W. S. Eaton, president, came next on the list with a glider weighing 110 lbs. This is a modification of the Wright model. By means of a derrick 25 feet high and a launching apparatus similar to that used by the Wrights, they attempted to put their machine into the air for a glide. After several trials one glide of 24 feet was obtained. The machine developed a strong reaction when up to speed, sufficient on two occasions to tear the car loose from the track. On one trial the machine reared up in front and sat down on its rear edges, owing to a too great turning of the front planes. This glider won second place.

Van M. Griffith came third on the list, and made many attempts at towing flight. His machine was a two-decker, having a rear tail consisting of vertical and lateral planes. He was not quite so successful as Mr. Smith.

F. L. Hetzel followed next in E. G. Ford's machine. This one was similar to Van M. Griffith's. He attempted one or two towing flights.

No power machines were entered. The club has offered a prize of $1,000 to any member of the club who, with a machine of his own invention, can fly under power a distance yet to be set by the committee.

The Leonard cup is a challenge cup to become the property of the winner only when won three times in succession.

No entry was made for the Roy Knabenshue cup offered to the power machine that can fly 500 feet under power.

Geo. O. Wilson attempted a towing flight in D. J. Johnson's "aerofoil," but owing to a wrong attachment of the bridle the planes were jerked over the seat and broken.

This machine is constructed on unique and original lines, and bids fair to make itself known in the future. The machine without its engine weighs 120 lbs., and has 500 square feet of surface. It is a biplane, but the upper plane is about one-third the area of the lower plane. The planes are three feet apart, and are fixed rigid together at their front edge. Crescent shaped, they present the convex edge to the front. The engine and operator are suspended by two points on the front edge of the lower plane and by one point to the rear edge. At this rear suspension a large tail is hinged. A lever runs from this hinge to the operator's seat. By means of it the tail is depressed, at the same time elevating the rear edge of the lower plane, and rotating it around its front edge.

When the tail is raised the rear edge of the lower plane is lowered. By this means fore and aft stability is to be maintained. Lateral stability is secured by an ingenious arrangement whereby the side of the machine that is tilted up is automatically compelled to assume the whole weight of operator and engines, thus bringing the tilted side back again.

Mr. Cronkite conducted some kite-flying contests.

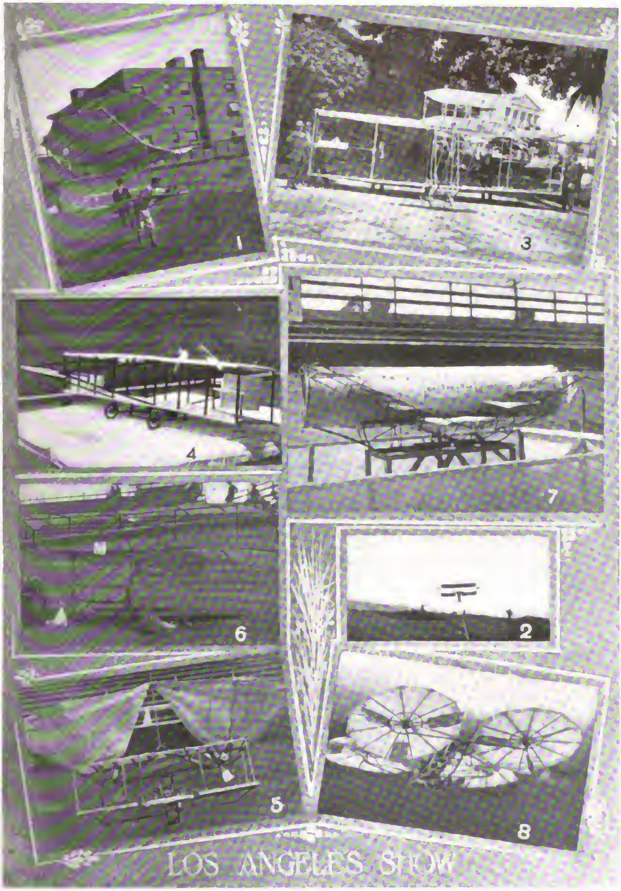
Three commercial companies have been formed by members of the club for building flying machines.

The club now numbers two hundred members, and it is in a flourishing condition. The success of the show and the present flourishing condition of the club are due largely to the energy and push of Mr. W. H. Leonard. It was through his initiative that the balloon "America" was rescued from its perch in the high Sierras where it had been left by Capt. A. E. Mueller and his party as related in the last issue of "Aeronautics." This balloon was run as a captive at the show, and it proved a great attraction. Capt. A. E. Mueller acted as pilot.

JERSEY'S AERO CARNIVAL.

Baldwin Flies New Ship.

Those members of the Automobile Club of America who followed the advice given in the club's journal under the title "Official Bulletin of the Aero Club of America," which read that from May 25th to 31st



1. Edgar S. Smith's Triplane Glider. 2. Cleve T. Shaffer at the start of a towed flight. 3. Glider of Polytechnic School. 4. A. L. Smith's modified Wright model. 5. Frank Steffan model. 6. D. J. Johnson's machine. 7. Gasless airship of A. L. Smith. 8. Gyroplane model of J. H. Klassen.

"members will have at Arlington an opportunity to see what is actually being accomplished in aerial navigation," must have thought that the art was still in swaddling clothes.

As a "carnival," the joke perpetrated by the West Hudson Aero Club, so called, upon the Aero Club of America, the Aviation Section of the Automobile Club of America, was a distinct success; but some hunting was needed to locate the aero part of it. Instead of a great field, one found an embryo city with theoretical looking streets all laid out with nice little trees bordering the stone sidewalks. Here and there were real estate offices, and agents were industriously distributing circulars calling attention to the advantages of Arlington lots. Governor Fort, who "opened" the carnival, was assured that the affair was really aeronautical, and to prove it advance agents hastily covered the real estate signs with American flags before the governor and his cavalcade arrived.

Thousands of people were on hand every day to eat peanuts, drink pink lemonade, have their fortunes told, palms read, and see "Little Egypt," "Salome," the tented vaudeville show, and the circus, or ride on the Ferris wheel and merry-go-round.

"A balloon on the ground is a great thing for the show business," said one of the Orientally garbed fortune-telling women, as she predicted for the twentieth time to an anxious 10-cent client that in twelve months or less the citizens of West Hudson would enjoy the pleasure of sailing by an aeroplane rapid transit service direct to New York. "I could prophesy bigger things," she added, confidentially, "if the price were bigger."

On the afternoon of May 25th, Governor Fort made an opening speech, followed by an Assemblyman, a Representative, and Evelyn Baldwin.

Capt. Thos. S. Baldwin made ascents in his dirigible every day but one, and Morris Bokor ran his triplane up and down the streets of the youthful city, while safely anchored to the ground was the "Jersey Mosquito" of V. L. Ochoa, a big metal "flapper." Samuel F. Perkins, with all his kites and banners out, really saved the day for the aero division, while the crowd waited for nightfall, when Capt. Baldwin could sail the dirigible free from the pitfalls of Arlington zephyrs. Captain Baldwin's flights were real ones, too.

The Baldwin Dirigible.

The Baldwin dirigible has been lengthened since it was used late last fall, but is substantially the same as described and illustrated in the April '08 issue. The bag is 87 ft. long, by 16 ft. in diameter at the front, tapering to 15 ft. at the rear, and holds 14,000 cubic ft. of gas. The frame work has been lengthened 12 ft. There is no horizontal rudder in the rear, the one near the front being found sufficient. A single 11-foot wooden propeller, built by Glenn H. Curtiss, is driven by a 15 h. p. Curtiss air-cooled motor, and the pull is 205 lbs. A new Curtiss water cooled motor, one of the new type now being put out by the Curtiss company, will shortly be installed. The horizontal rudder is moved by a lever as shown in the accompanying photograph, while the vertical rudder is steered with tiller ropes. Later both operations will be done by a steering wheel. The double surface horizontal rudder measures 16 by 2½ feet.

Morris Bokor won the $500 prize for the best designed and constructed machine. S. Y. Beach, who got there late in the afternoon of the last day, after the judges of the Aero Club of America had finished their work, with his new Bleriot-like monoplane has protested to the A. C. A., and states that his machine is the better, and that he was promised by the management opportunity to compete against the Bokor machine. The thousand dollar prize for a mile flight is still to be won.

SCHOOLBOYS' KITES AND AITKEN GLIDER

William H. Aitken came up from Chester, Pa., on the last day with a Wittemann glider, and made four successful though short flights on the side of an adjacent slope.

There were probably two hundred young kite flyers in the contest May 29, and of that number 103 by actual count came from Public School No. 77, at Eighty-sixth Street and First Avenue, Manhattan. In that school kite-flying has been taken up with great enthusiasm by both the big and little boys, who are under the guidance of W. H. Mohr, A. E. Horn and C. A. Borkland, instructors in the school. Naturally enough, most of the prize winners came from this large body of amateur experts.

The Arlington boys, using the ordinary toy-shop type of kites, soon came to grief in the wind that blew nearly twenty miles an hour. Samuel F. Perkins replaced them with kites of his own. Pretty much every type and design of kite was in the contest, including Malay and Chinese, Dragon, French war, triangular, box, tetrahedral, mannikin and monoplane kites, also one kite just like a full-rigged ship.

The judges were: Samuel F. Perkins, kite expert; Edward Durant, A. E. Horn, Instruction or Science at Public School No. 77, New York City, and Walter M. Mohr, U. S. Signal Corps.

Gold medals were awarded as follows: Bryan M. Battey, 152 W. 49th Street, New York, for the best constructed kite, one made of cedar; Wilson Marshall, Jr., 48 W. 50th Street, New York, for the largest kite that flew successfully; Wm. Hanford Osborne, 27 John Street, Belleville, N. J., for a photo taken by a camera which was suspended in the air by 12 monoplane kites flown by Samuel F. Perkins. The photo was taken automatically by means of clock work; John Doyle, adult, 645 Garden Street, Hoboken, N. J., for the most artistic kite, a full rigged ship with all sails set; Eugene Levinsky, public school 77, New York, for the longest kite strung out, 12,380 ft.; Alfred Vollmer, public school 77, New York, for the highest kite, 10,107 fe.; William Krupp, public school 77, New York, for a kite that pulled 14 lbs.

Silver medals were awarded as follows: Jacob Borsurk, public school 5, Borough of the Bronx, N. Y. City, for a kite that flew with a string nearest to 1½ miles; Sidney Rabinowitz, public school 77, N. Y. City, for having next the longest string out; Abraham Moscou, public school 77, Manhattan, for next to the highest, 9,300 ft.; William Abrams, public school 77, Manhattan, for a kite that pulled 13½ lbs.

Baldwin and His Airship at Arlington

The Forward Planes Tilted Up and Turning to the Right

Bronze medals were awarded as follows: Louis Hollinder, public school 77, had string out 9,675 ft.; Herbert Foeppel, public school 77, had string out 7,200 ft., third highest. Michael Gunther, public school 77, had a kite that pulled 10 lbs.

The Fitchburg Board of Trade and Merchants Association, appreciating the interest the "Boston Herald" has shown in ballooning, as especially evidenced by the offer of a silver cup to the man landing nearest Boston Common in a flight from a Massachusetts point, has supplemented this offer with a cup to the man winning the "Herald" cup and starting from Fitchburg. It is now on view in a store window.

The cup is a solid silver affair, standing 8½ inches high on an ebony pedestal 2½ inches high. It is 5 inches across the mouth and 8½ inches across the handles. On the face is a balloon, on which is etched "Boom Fitchburg," and in facsimile the badge used last fall when, on the day of the Glidden ascension, the "Boom Fitchburg" day was on. On either side of the balloon is the text of the date, September, 1908. In a semicircle beneath the balloon is "First, last, and all the time," this being the slogan of the organization.

Prof. Gill, of Osburn, O., has just completed a dirigible which gets its buoyancy from hot air which is heated by a heater of his own design. On the tryout, the engine did not work, though he states that he expects to have it in shape to come from Osburn to Dayton on the 17th.

Capt. Baldwin and S. F. Perkins will be in Norwich, Conn., with the dirigible and kites at the city's 250 anniversary celebration. President Taft will be present at the ceremonies and witness the airship ascents.

The United States Government has ordered a 540 cubic meter balloon and three smaller ones for signal work from Capt. T. S. Baldwin; are to be delivered July 1.

A prominent Boston society man has made application to the Aero Club of New England for use of one of their balloons in which to be married. The party will consist of bride, groom, pastor, a witness and the pilot. If the request is granted, Pilot Van Sleet of Pittsfield will have charge of the balloon.

AERONAUTISM.

NATIONAL CHAMPIONSHIP BALLOON RACE.

Indiana Aero Club Handicap.

FORBES LOSES TO BERRY.

NEW U.S. ENDURANCE RECORD NOT ALLOWED.

The title "Champion American Balloonist" was contested for at Indianapolis on the fifth of June, and was the first of the annual "National Championship" balloon races inaugurated by the Aero Club of America, and conducted under the rules of the International Aeronautic Federation.

A silver trophy is offered by the A. C. A. for the longest distance made, and Carl G. Fisher, president of the Aero Club of Indiana, which made all the local arrangements, presents the pilot who remained in the air the longest time a duration cup.

The contest was open only to licensed pilots of the A. C. A., with balloons up to 2200 cubic meters capacity. Gas and ballast was furnished free through the courtesy of the Indiana Club.

The University City, with Berry and McCullough.

During Inflation.
The left hand picture shows three balloons in the air.
Photo by E. P. Noel.

Indiana Club Handicap.

Preceding the national distance race, the contest of the Aero Club of Indiana was started under the auspices of the A. C. A. This was a handicap affair, the first to be held in America. Balloons up to 600 cubic meters, 601 to 900, 901 to 1200, 1201 to 1600, 1601 to 2200 cubic meters were allowed under the rules to carry one, two, three, four and five passengers respectively, the winner to be the balloon going the greatest distance. C. A. Coey exceeded the size limit in his big "Chicago," and it only carried two passengers, but he was given a handicap of three times the longest distance made by any one of the competitors.

ST. LOUIS WINS BIG RACE—FORBES LANDS PLACE MONEY—HANDICAP FOR INDIANAPOLIS.

Three balloons started in the handicap race: Dr. H. W. Thompson and Joseph Blake in the Aero Club of Ohio's balloon "Ohio"; Dr. Goethe Link and R. J. Irvin in the "Indianapolis," and C. A. Coey and

"Jack" Bennett in Coey's "Chicago": the names first given being those of the pilots.

ORDER OF FINISH.

1.—Balloon Indianapolis, Link and Irvin, landed at Westmoreland, Tenn., distance 222 miles; balloon built by G. L. Bumbaugh, Indianapolis.

2.—Balloon Chicago, Coey and Bennett, landed at Scottsville, Ky., distance 208 miles.

3.—Balloon Ohio, Thompson and Blake, landed at Nashville, Ind., distance 39 miles.

In the championship contest six balloons started, with the following as pilots and aides: A. H. Forbes and C. B. Harmon in the latter's new rubber-silk balloon; Charles Walsh and Capt. T. S. Baldwin in the Indianapolis club's balloon; A. H. Morgan and J. H. Wade, Jr., Carl G. Fisher and G. L. Bumbaugh, A. B. Lambert and H. E. Honeywell, John Berry and Paul J. McCullough.

ORDER OF FINISH.

1.—Balloon University City, Berry and McCullough, landed at Ft. Payne, Ala., distance 380 miles; duration 25 hours, 35 minutes.

2—Balloon New York, Forbes and Harmon, landed at Corinth, Miss., distance 357 miles, duration 35 hours, 12 minutes.

3.—Balloon St. Louis III, Lambert and Honeywell, landed at Kelso, Tenn., distance 321 miles.

4.—Balloon Indiana, Fisher and Bumbaugh, landed at Ruskin, Tenn., distance 261 miles.

5.—Balloon Hoosier, Walsh and Baldwin, landed at Greenbriar, Tenn., distance 234 miles.

6.—Balloon Cleveland, Morgan and Wade, landed at Columbus, Ind., distance 40 miles.

At the date of going to press exact data is still lacking at the Aero Club. Pilots have not sent in maps showing landings, record sheets showing times, and barograph readings. The distances here given are approximate only. The close finish between Berry and Forbes will make necessary the porducing of maps and evidence. The Indiana, Fisher and Bumbaugh, stayed in the air 40 hrs., 25 min., but was disqualified by the A. C. A. for coming down twice to get water. The aeronauts state that the first time they let down a rope; and the second time some men pulled the balloon down to rest on some rails. This ought to be a good test for the balloon and show skilful handling, for every descent means lost gas and ballast. Forbes and Harmon were awarded Fisher's duration cup for 35 hrs. 12 min.

The races, while a success, were disappointing to some particularly interested therein. Bad gas and not enough of it reduced chances for long trips. The pipes should have been larger. Many of the balloons had to start inflating the day before, as was the case with the balloon "Ohio" representing the Canton Club. This balloon has seen a lot of service and should have been gone over, revarnished and put in good shape for a race. It is the same balloon that made a trip two days before the Gordon Bennett in 1907 frim St. Louis to Indianapolis with Hawley and Post, and which helped to interest that city in ballooning.

"Wade and Morgan did not inflate till the day of the race and got a poor run of gas," Stevens, the builder of the balloon, says. "The other balloons had all used the coal gas specially made and started for the race, but on account of shortage of gas toward the last the "Cleveland" got the regular city gas direct from the retorts."

Further details of the race will be given in a subsequent issue. We would like to hear from the contestants.

FOUL PLAY CLAIMED.

An examination of the bag of the balloon "Cleveland," which came down a short time after the start, has convinced A. Leo Stevens, the builder of the balloon, that the big bag had been slashed while anchored in the starting grounds the night before the race. Mr. Stevens has now offered a reward of $1,000 for the arrest of the person responsible for the vandalism.

"Near the top of the bag," he said, "I found a long slash. The injury was where detection was not easy, and it was apparent that the man who did this piece of foul play intended serious harm to the aeronauts. Luckily the slit was too short, and their descent was so slow that they escaped injury. The cut is in the ripping panel in the edge of the reinforcement, a place where its immediate discovery would not be likely."

Certainly if this matter is investigated and the charge found to be true a most severe jail sentence should be in order: but it is almost impossible to believe that anyone could perpetrate such a thing, that might lead to most serious consequences.

OTHER BALLOON RECORDS.

World's distance record, 1,193 miles, held by Henry de la Vaulx, Paris to Russia, October 9, 1900.

World's duration record, 72 hours, held by Col. Schaeck, Switzerland, made in 1908, in the third Gordon Bennett contest, from Berlin, October 10.

United States distance record, 872 miles, made by Oscar Erbsloh in the Pommern, from St. Louis, October 21, 1907, to Asbury Park, N. J., in the second Gordon Bennett contest.

United States duration record, 44 hours, by Alfred Le Blanc, from St. Louis, October 21, 1907, in second Gordon Bennett contest.

Lahm Cup record, 475 miles, by Capt. Chas. de F. Chandler and J. C. McCoy, from St. Louis, October 17, 1907, to Walton, W. Va.

Long United States trips: John Wise, St. Louis to Henderson, N. Y., 809 miles; Dr. Frederick J. Fielding and H. E. Honeywell, Chicago to West Shefford, Que., 786 miles; A. B. Lambert and H. E. Honeywell, from St. Louis, November 18, 1908, to Tiger, Ga., 461 miles, but made two intermediate landings; G. L. Bumbaugh, C. A. Coey and C. H. Leichliter from Quincy, Ills., June 1, 1908, to Clear Lake, S. D., 431 miles.

The necessity for conserving gas on long voyages would seem to make the plan of Darwin Lyon, a desirable one. For the March, April and May issues, 1908, of this journal the subject of liquefied hydrogen was discussed at great length, to the end that it seemed feasible, though costly, to remain in the air for a great length of time by utilizing a supply of liquid hydrogen. It is to be hoped that some day this will be tried out.

Dr. Randall Wins North Adams Trophy.

The "point-to-point" race between Dr. R. M. Randall, the challenger in the "Greylock," and A. D. Potter, the defender in the "North Adams No. 1" from North Adams on May 12th in the second contest for the Forbes cup was won by Randall, who landed within three miles of the previously selected landing place. Potter, finding he could not get within the required distance, decided to keep on and make a long flight. Dr. Randall's was at Leeds, Mass., about 30 miles, and Potter's at Mansfield, Ct., about 72 miles.

Balloon Races at Milwaukee.

Novel features in balloon flights and races are promised for Milwaukee's homecoming week, August 3-7, if offerings of the Milwaukee Aero Club are adopted. Ordinary flights of at least three balloons are assured and a more elaborate program rests only in the willingness to provide inducements for outsiders.

If visiting air crafts are to be secured, one of the events will be a hare and hound race. This will consist of a concerted flight of about six balloons, one of which will drop after having been in the air for an hour. Each of the others must follow suit and play hound to the hare balloon, the prize winner being that which lands nearest the quarry.

Another stunt is known as the fixed point race. Each pilot announces his determination to land as near as possible to a certain spot, which may be 100 miles from Milwaukee, if desired. The capital prize goes to the one who makes his landing nearest his announced objective point.

A long distance race by three balloons not participating in any of the other events, also is a possibility. The club has arranged for A. Leo Stevens to come to the city with two other pilots and three balloons, and this feature would be the climax of a busy celebration of the aerial section of naval day.

The Great Loving Cup Presented by the Members of the Aero Club of America to Leo Stevens

Trophies for Balloon Sail to Montreal.

Members of the Aero Club of New England are much pleased over a communication received from Mr. U. H. Dandurand, Vice-President of the Automobile Club of Canada, at Montreal, which states that the Club will offer a valuable trophy to the pilot of a balloon landing first on the island of Montreal that starts from the State of Massachusetts, or a point in the United States south of the latitude of Poughkeepsie, New York; also that one of their directors, Mr. E. Tarte, one of the proprietors of "La Patrie," a leading daily of Canada, offers a trophy under the same conditions, that lands nearest their office building in the Dominion of Canada.

Both trophies are offered through the Aero Club of New England, and are opened to all pilots of clubs affiliating with this Club.

News In General

TAFT PRESENTS WRIGHT MEDALS.

Distinguished Assembly at White House.

On June 10, Wilbur and Orville Wright received from the hands of President Taft, the Aero Club of America's medals.

It was a notable group that gathered in the East Room of the White House at 2.30 o'clock. There were members of the Cabinet, foreign attaches, military officers and men and women distinguished the world over in art and science.

Hon. Herbert Parsons spoke of the Wright Brothers' work and their delayed recognition. He said: "This is the first time that a President of the United States has honored the science of aeronautics since President Washington in 1796 witnessed a balloon ascent."

The medals were then handed President Taft who said in part: "I esteem it a great honor and an opportunity to present these medals to you as an evidence of what you have done. I am glad—perhaps at a delayed hour—to show that in America it is not true that 'a prophet is not without honor save in his own country.' It is especially gratifying thus to note a great step in human discovery by paying honor to men who bear it so modestly. You made this discovery by a course that we of America like to feel is distinctively American—by keeping your nose right at the job until you had accomplished what you had determined to do.

"It has been said that this is the first presidential recognition of aeronautics since President Washington. Well, all I have to say is that I had a predecessor who, if aeronautics had proceeded as far when he left office as it has to-day, would not only have gone down under the water in a submarine boat, but would have gone up into the air in a flying machine. (Laughter.) No one had a more earnest interest, a more active interest and a greater desire to see into the things that make for progress than my predecessor.

"There may be some reason why some presidents have not figured in aeronautics. I see that these gentlemen who have flown in the air are constructed more on the plan of the birds than some of us. (More laughter.)

"I don't like to think, and I decline to think that these instrumentalities that you have invented for human use are to be confined in their utility to war. I presume that they will have great value in war, and I suppose that all of us representatives of the various governments ought to look at this matter, following the rule of governments of to-day, from the standpoint of their utility in war; but I sincerely hope that these machines will be increased in usefulness to such a point that even those of us who now look at them as not for us may count on their ability to carry more than "thin" passengers in times of peace. (Laughter.)

"I congratulate you on the recognition that you have received from all the crowned heads of Europe, and I congratulate you that in receiving it you maintained the modest and dignified demeanor worthy of American citizenship."

Immediately beside Wilbur, Orville, and Miss Wright at the presentation, were: Colgate Hoyt, ex-President Automobile Club of America; J. C. McCoy, Charles Jerome Edwards, Alan R. Hawley and A. H. Forbes, officials of the Aero Club of America. William J. Hammer, represented the American Institute of Electrical Engineers with 6,400 members, and the Aeronautic Society. As soon as the President handed the medals to Wilbur and Orville Wright, he called them to another room, saying: "We must be photographed."

In the morning the Aero Club of Washington entertained the Wrights, visiting members of the Aero Club of America and distinguished guests at luncheon at the Cosmos Club.

Among those present both at the luncheon and presentation were, Vice-President and Mrs. Sherman, members of the Italian, Brazilian, French, German, British, Japanese, Austro-Hungarian, Russian, Turkish and Mexican embassies. General Nelson A. Miles, General James Allen, General Crozier, Major Geo. O. Squier, Speaker Cannon, Rear Admiral and Mrs. Selfridge, Lieutenants Lahm and Foulois, Representative and Mrs. Nicholas Longworth, James Means, Dr. A. F. Zahm and others. There were at least twenty members of the Aero Club of America present.

As a public exhibition of the appreciation of the citizens of the United States of what the Wright Brothers have effected in the development of the practical navigation of the air the occasion was recognized by every one present as historical.

The Brothers Wright announced that the aeroplane would be shipped in a few days, and that flights would begin about June 21st. Orville Wright will do the flying.

America's Reception of the Wrights.

MISHAP BALKS BALLOON WELCOME PLAN.

Leo Stevens and Dr. Julian P. Thomas, acting on behalf of The New York American, were the first persons to step aboard the Kronprinzessin Cecilie on May 11 to welcome the home-coming Wrights. They had planned to take an inflated balloon down the Bay on the deck of a tug, greet the Wrights and then return to New York via balloon; but the tearing of the balloon in getting it from the gas works to the tug played the deuce with the novel scheme.

It was 10 o'clock the previous night before it was definitely decided that the flight was feasible. A big truck and two automobiles started for the Stevens works at No. 282 Ninth Avenue. Mr. Stevens notified the Signal Corps and members of the Columbia University Aero Club of the plans, and they gladly joined with him.

The basket, net, sand bags, gas envelope and other paraphernalia of the 18,000 cubic foot balloon "You and I" were packed on the truck and one of the machines started to gather the members of the party.

Meanwhile Dr. Thomas was engaged in the task of getting the gas. Finally it was arranged with the Astoria Heat, Light and Power Company.

Stevens and his helpers worked away in total darkness before lanterns could be obtained, and then until daylight he was busy laying out the net and making the gas connection. He was aided by the Signal Corps, and the young men from Columbia.

Many difficulties in the way of trees and wires had to be overcome, and the big balloon was carefully manoeuvred to the very water front, where it was necessary to jump it over a series of wires, through several enormous trees and a lot of telegraph poles, and yet retain it captive. This was arranged for by tying a second rope to the car, throwing it over all the obstructions, and then letting go of the main line.

Just as the main line was let go a sudden gust of wind caught the balloon and drove it with great force against a tree. The destruction was instantaneous, the whole side of the balloon being ripped out.

"We can't let a balloon interfere with the reception to the Wrights," said Stevens, and the party then boarded a fast tug, reaching the steamer and chatted with the Wrights before the revenue cutter arrived with delegates from the Aeronautic Society and Aero Club of America aboard. Robert Lee Morrell and A. H. Forbes represented the Aero Club, and William J. Hammer, the Aeronautic Society.

After the formal greetings were over, Mr. Hammer, an old friend of the Brothers Wright, had a pleasant talk until the boat docked, where other members of the Aero Club were introduced.

LUNCHEON AT LAWYERS' CLUB.

The following day the Wrights were the guests of the Aero Club of America at a luncheon in the Lawyers' Club. Mr. Forbes presided. The others at the guest table were Colgate Hoyt, Colonel John Jacob Astor, W. P. Hamilton, Alan R. Hawley, Charles Jerome Edwards, Robert Lee Morrell and L. D. Dozier, of St. Louis.

When Wilbur Wright was called upon to speak, he acquiesced for about three-quarters of a minute. He said:

"Since I arrived yesterday I have noticed a tendency to wobble that I thought was from the boat, but now I know your welcome is to blame for the rocking of this floor. It is not the custom of my brother or myself to do much talking." Here was prolonged laughter. "Other people sometimes take it upon themselves to read our minds and tell why we do this or that, and express views and opinions which, of course, are quite at variance with our own thoughts. Among other things, they have sometimes stated we were compelled to go abroad in order to obtain sufficient recognition. Now those who know the real history know the first recognition we ever received was given to us by the Aero Club of America. (Cheers.) Within a few months after we made flights, in 1905, and within a few months after the Aero Club was organized, by action of the Board of Directors our flights of 1905 were officially recognized. In later times it has sometimes been said we had to go abroad to obtain official recognition. Our members have all known it."

Prolonged applause greeted this loyal statement. Then Orville Wright was called upon.

"Fellow members of the Aero Club of America! My brother has talked so long that there is no time left for me. (Applause.) I wish to express my universal thanks for the very kind reception you have given us and to tell you how pleased we are to be back again in our native country."

John F. O'Rourke proposed "a rising toast to the rising aeronauts."

EDWARDS RAPS CONGRESS.

Charles Jerome Edwards, treasurer of the Aero Club, said, in part:

"The men who have wrenched from the caverns of the earth her hidden wealth; the engineer who opens up newly discovered country, where the agriculturist follows to make the desert blossom with golden grains; the merchant, whose warehouses cover the land and whose sails whiten every sea; the manufacturer, who turns the ugly raw product into beauteous designs of every phase of necessity and luxury; the architect, who pierces the heavens with monuments wherein to house the business of a metropolis—each and all have only followed the examples of earlier civilization. But you have surpassed all these, even in your modesty, for you have created. Where others have scratched the soil of aeronautics, you have solved the problem of aviation and brought forth a bounteous harvest of results.

"It is a shame that cries aloud that our nation should so force its sons to demonstrate on foreign soil, and seek support from alien hands for the product of their genius. This is exemplified anew in the failure of the recent Congress to make the appropriation of $500,000 which had been inserted in the Appropriation Bill in order that America might not delay in carrying to fruitful results experiments in aerial science."

Colgate Hoyt, ex-President of the Automobile Club of America, a native of Ohio, boomed that State in his usual delightful vein. L. D. Dozier, of the Aero Club of St. Louis, was the next speaker. Col. Bingham, New York's Police Commissioner, was glad to "meet men who have done something. This is the class of men we would all like to be, and all love and admire." He regretted he wasn't "from Ohio," but that he was grateful to the Wrights because they had put up a machine that would fill a long felt want in the army, or in the army as it was constituted at the first battle of Bull Run. He was not there, but he had heard of an officer who was and who attempted to stem the tide of retreat. The officer met a man who was going toward Washington and said to him, "What are you running for?" The soldier kept on, but looking back over his shoulder remarked, "Because, by God, I can't fly!"

The affair was a most enjoyable occasion and enthusiasm ran riot among the hundred present. The famous bird-men left the same afternoon for Dayton, after a call from Laurence Lesh, the young man whose ankle was broken in a towed flight at Morris Park last Fall.

Wrights Welcomed Home.

The Wright Brothers, Orville and Wilbur, famous aeroplanists, arrived at noon of the 13th in Dayton, their home city. Miss Katherine Wright accompanied her brothers. A reception was tendered them by their old friends and neighbors. The Wrights were met at the station by a committee headed by their cousin, A. L. Shearer of this city.

Outside the station in an open carriage the aged father, Bishop Milton Wright, waited. Beside him sat his favorite grandchild, Leontine Wright, daughter of Lorin Wright. In another carriage were Mr. and Mrs. Lorin Wright and their other two children.

A throng of townspeople cheered, whistles sounded, and cannon boomed a salute of thirty guns, while greetings were exchanged. A procession formed and moved toward the home of the Wright family by way of Fifth Street, one of the principal streets of the city. At the further end of the bridge over the Miami a band was stationed, and from that point to the home it headed the procession, playing "Home, Sweet Home." At the house a laurel wreath, executed in India ink, was presented to the aviators. The design shows Mercury flying above the world. At the top of the design appears Caesar's famous message, "Veni, vidi, vici."

Dayton Celebrates on the 17th.

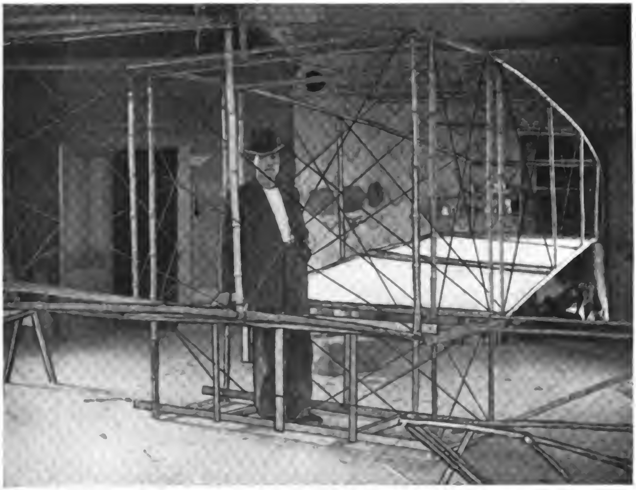
Great preparations are being made for the celebration June 17-18. Thousands of dollars have been raised for the event and the entire city will be enveloped in flags and bunting. The story of locomotion will be told by floats in a pageant representing modes of travel on the land, sea and in the air. There will be parades of the militia, fire department, band concerts, receptions, bouquets, fireworks and the presentation of the Nation's tribute in the form of a Congressional medal. In a previous issue we gave the history of our National medals.

The Wrights will not make a flight, even for Dayton. A. Leo Stevens, however, is to take one of his balloons to Dayton and take up both of the famous brothers.

E. R. Thomas Building Flyer.

An experimental machine, on the design of which John Squires, M. E., has been serving as consulting engineer, is being built privately for E. R. Thomas, the head of the E. R. Thomas Motor Co., which built the "New York-Paris" car, and will be ready for trials about July 1st. The design is highly original, several very unusual features being incorporated in the machine for experimental purposes.

Mr. Squires has just delivered a glider of his own design at Glider Hill, three miles south of Roycroft, N. Y., for the Glider Club, composed of twelve department heads, including the manager, who desires



C. A. Zornes and His Aeroplane

to get the "feel" of free flight. Glider Hill has a descent of about three-quarters of a mile at 25 degrees; clean pasture land without stones, fences, or trees.

It is now proposed that the Glider Club be enlarged an additional eight members and an aeroplane be built. In fact, the order has already been given to go ahead on the design.

These organizations are entirely independent of any connection with the factory, all expense being defrayed solely by the members, who are very enthusiastic indeed.

Aeroplane in Washington.

Harry A. Orme, of Washington, D. C., has completed the lightest aeroplane. This particular machine has never flown, but Mr. Orme has flown gliders built on the same principle, so he thinks there is no question about its working if the motor now installed is sufficiently powerful. The whole machine, including the motor, weighs less than 100 pounds.

The radical departure of the Orme machine is in the steering device, which it carries on top. The machine proper consists of two planes eighteen feet long. These are trussed with fine steel wire and are rigid, so they cannot be warped. There is a horizontal rudder in front of the machine for elevating and depressing it, and at the rear is a double vertical rudder, apparently like the Wright rudder.

Over the top of the main planes there is a third round deck, much like a mushroom, or a very flat umbrella. It is in this that the chief peculiarity of the machine consists. This mushroom deck is set on springs and can be distorted in any direction—that is, the edge can be pulled down and thus will guide the machine like a bird's tail. Mr. Orme has built several gliders, using this system of control, and it has worked perfectly.

When it comes to the horizontal rudder in front there is another surprise in store. The movement of a lever from the aviator's seat bends the rudder in the middle along its longest axis and will act much like a skater sticking down his heel on the ice, giving a braking effect that could not be secured with a plain horizontal surface.

The double vertical rudder at the rear is also a surprise. By releasing a spring the vertical surface can be thrown up into a flat plane like the front rudder, so that a backward tilt of the machine is stopped as soon as it commences. The whole of the control mechanism is worked from a wheel and two levers at the aviator's seat.

The motor is an air-cooled affair of Belgian make, of eight horsepower, and weighs only forty-five pounds. It is run by a high tension magneto and works as smoothly as a sewing machine. It is geared to two cog wheels at the back and drives the propellers by chains over two-to-one sprocket wheels. The engine makes about 1,800 revolutions, which drives the propellers at about 900.

The propellers are built of thin steel for the test and have movable blades that can be set at any pitch. No attempt has been made so far to determine the thrust of the propellers, but it is thought there is an abundance of power to drive the machine. The pitch of the propellers will be changed from time to time and when the most effective pitch is found there will be propellers cast of aluminum or built up of wood.

The work on the machine has all been done by Mr. Orme himself and is remarkably fine. The frame is built of spruce with the ends of strips only an eighth of an inch thick, steamed and bent to shape. The covering of the planes is of light canvas. The total supporting surface is 174 square feet.

English Helicopter-Monoplane.

BY GEO. H. LOOSE.

At Fruitvale, California, which is a suburb of San Francisco, there is building a combined helicopter and aeroplane. Peter English and his son, W. P. English, are the inventors of the airship. Their design is the result of a number of years experimenting on different types, and in all the features in which it differs from the aeroplane proper it has been thoroughly tested.

The machine consists of a triangular frame of steel tubing, somewhat similar to the framing of our American dirigible balloons, tapering at the ends where the propellers are attached. Beneath this frame is suspended a square platform on which is the motor, operator, and any passengers. At each corner of this platform is a pneumatic-tired wheel supporting the machine when not in flight. At the top on each side, running parallel with the frame are the supporting planes. One plane on each side with a surface of 400 square feet. These planes are of especially prepared silk and are curved up at both the forward and after edges; also being curved from the frame to the outer eoge as a bird's wing.

Mr. English believes that by curving the planes upward both in front and back, he obviates the danger of pitching, as the curved portion will serve to right the machine should any failure of the motor cause it to lose headway, allowing the machine an opportunity to pitch forward or backward. At each end of the frame is a propeller of especial design. These are driven through bevel gears allowing them to be run in a vertical position or they can be moved to a horizontal position, while revolving, by a single lever on the operating platform. When in a horizontal position one points upward while the other points down. The propellers revolve in opposite directions, but move from a horizontal to a vertical position or vice versa in unison, at the will of the operator.

The main driving shaft runs the entire length of the frame in the center of which are beveled gears, connecting a vertical shaft running down to beveled gears again, which connect it to the shaft of the motor on the operating platform. The motor is horizontal and parallel to the main driving shaft about 8 feet above. All the shafting is hollow steel and run in McAdamite and ball bearings. The propellers are 16 feet in diameter and are two bladed, or rather two disked, as two disks are used instead of blades. These disks are securely braced to a wheel, the rim of which reaches the center of the disk where the strain is greatest. Mr. English says when one of his propellers is driven at the rate of 200 R. P. M. it creates a lifting power of 830 pounds dead weight, which would make a total lifting power of the two propellers 1,660 pounds. As the machine is not expected to weigh oved 600 pounds, it will leave over a thousand pounds for gasoline, operator and passengers.

The rudder which is placed in front, midway between the operating platform and the forward propeller, is of a double elliptical design being moved in any direction by one lever.

The motor is an air cooled 8-cylinder V type 60 h. p., weighing 150 pounds. It was built at Hall's machine shop in San Francisco and is a beautiful piece of work. All the connecting rods are hollow as well as the crank shaft, all unnecessary weight being cut away.

In speaking of his machine Mr. English says, when a flight is to be made the propellers are moved to a horizontal position. The motor is then started and the machine will rise directly off the ground until the desired height is reached, then the propellers will be gradually turned while revolving to a vertical position. At this point the machine is converted from a helicopter to a monoplane.

When a descent is decided the propellers are gradually moved back to a horizontal position. Then when the headway or forward movement has stopped, the propellers being in a horizontal position, the motor is slowed down allowing the machine to gradually descend at the will of the operator.

Mr. English says he expects to make a trial flight the first part of July, as he will be finished with the machine in a few weeks.

One of the propellers was started in the shop recently and those who witnessed it say they were the nearest they had ever been to the starting point of a cyclone. The wind was terrific and the floor beams squeaked as the machine strained at the lines that held it down.

DOINGS ON THE COAST.

By Cleve T. Shaffer.

William Talbot, of Santa Clara College, Cal., is experimenting with a machine modeled after Prof. J. J. Montgomery's ideas.

Chas. C. Bradley's, of San Francisco, model incorporating several new features, has shown remarkable stability in flight. The weight complete, with fore-and-aft rudders, is only ½ pound for 8 square feet surface.

Cleve T. Shaffer is building a new glider with finer lines than the old machines, and will go for the gliding record.

H. C. Bulask is working with Prof. Hidalgo on a machine.

Roy Knabenshue's latest effort is the "Fairy," claimed to be the smallest balloon in the world. It has a Japanese silk envelope, netting of fine Irish twine. The whole outfit including basket weighs but 60 pounds. In the initial filling a strong gust of wind parted the thin net and but for the prompt work of the assistants the envelope would have escaped. Inhalation of the escaping gas, however, overcame for a short time Russell S. Mitchell, Grover Crall, Squire Chamberlain.

Working models of the Wright and other machines imported from France are to be exhibited at an aeronautical evening of the Pacific Aero Club this month.

The English helicopter met with disaster in a test for lift. It became unfastened from the floor, and the lift testing mechanism in its shed and the helices were wrecked against the rafters. It has never been tried in the open or free flight.

J. Zenon Posadas, Jr., of San Francisco, has almost completed his double deck machine, 35 by 4 feet. He will use a 7 h. p. motor, claiming that the peculiar form and great efficiency of the propeller will allow of the use of such low power.

Mr. Zerbe, of Los Angeles, has given up experimenting with his aeroplane and is devoting his time to dirigible construction.

G. H. Loose, of Redwood City, Cal., will be ready with his monoplane the first of July. Work on it is progressing rapidly.

The first test of the Zornes aeroplane will be made July 2nd or 3d at Lind, Wash., where a stock company has been organized and a factory secured for manufacturing these machines.

Messrs. John W. Hudson and Clifton O'Brien, both members of the Pacific Aero Club, are constructing a biplane 40 feet by 6 feet, supported on wheels. automatic balance to be a feature. They are building their own motor, 35-37, h. p., of special design, details withheld at present.

Bokor Gets Grounds.

Morris Bokor, who has put on the market a long-tied motor, has now 600 acres of perfectly flat, treeless, sandy land at Westbury, L. I., for the use of those inventors who desire to avail themselves of what Mr. Bokor has to offer. Two acres will be used for housing sheds at a small rental. A complete machine shop will be installed where construction will be carried on.

5,000 Wright Aeroplanes Bought.

The American Lithograph Company has gone into the aero industry and has already sold 5,000 Wright aeroplanes to the Chattanooga Medicine Company, away back as far as last July. If anyone says that Europe has more aeroplanes than America, you will know different. There is the objection raised to this order, however, that they are only on paper and made of printers ink in fancy colors.

Another New Aero Motor.

In the near future it appears flying machine inventors will have a long list of engines from which to make a selection. The latest to enter the field is Carl Bates of Chicago, who is building a 4-cylinder motor to sell for around $500. This motor, he says, will be built of the best material obtainable, copper water jackets, combination steel and cast iron cylinders, McAdamite crank case, nickel steel connecting rods, chrome nickel steel crank shaft. The valves will be in the head of the cylinders, mechanically operated from an overhead cam shaft, thus doing away with push rods. The engine is expected to weigh about 150 pounds, for 25 to 30 real h. p. The cylinders will have a bore of 4½ inches and a wide range of speed is promised.

New Bates Flyer.

Carl Bates, of Chicago, whose first aeroplane has already been illustrated in these columns, has started work on a new machine intended to be an improvement upon the former. It will be a bi-surface machine, of course, and will have something new in the way of lateral balance. There is a single rear vertical rudder, and a single horizontal rudder in front. The main supporting planes are about 42 by 6 feet. Baldwin's vulcanized rubber-silk will be used for the surfaces. The joints will be McAdamite castings quickly detachable so that the machine can be dismantled and confined in a small space. The motor will be one of his own design which is being built by a Chicago manufacturer, and it will be cooled by Livingston aeroplane radiator with an aluminum water bottom. The aeroplane is expected to carry two people, and will have many unique features for steering, starting and stopping, etc.

Patent List.

"Means for use with balloons and other air vessels, for indicating air currents," Chas. Davis, London, England, No. 921,515, May 11, 1909. Device consists of a bracket secured to the edge of balloon basket. A "captive device" is supported pendently by a gimbal ring permitting motion in any direction; an indicating mechanism records the motion of the "captive device" which is influenced by air currents. Means are provided to let out or draw in the device from the car.

"Flying machine," Chas. R. Culver, Springfield, Mass., No. 922,264, May 18, 1909. Unusual aeroplane construction consisting of a chassis on wheels supporting a frame provided above with a plurality of aeroplanes in two sets, each set consisting of several planes and one set superposed above the other, but all connected so that the angle of each can be regulated. A motor driven propeller at the rear and front and rear rudders.

"Airship," Ben H. Tingley, Hamilton, Wash., No. 921,915, May 18, 1909. Dirigible balloon of usual form, combined with a frame surrounding envelope and a propeller at rear of bag operated by transmission from car through center of gas bag.

"Airship," Michael H. Whalen, New York, N. Y., No. 922,228, May 18, 1909. Usual shape of dirigible gas bag surrounded by a wire cage supporting the car and motor below. Revolving rudder and rotating fans control motion. A canopy carried by gas bag provides flexible planes which can be raised or lowered.

"Airship," Samuel D. Wheeler, Chicago, Ills., No. 922,549. Propeller inside a large tube, supported in the air by a plurality of gas bags and sails.

"Launching apparati," James Means, Boston, Mass., Nos. 922,710; 922,711; 922,712. No. 922,710 covers a table, which may be revoluble, on which is a launching car, the latter operated by a power-actuated endless cable, means for holding table in set position and for its position held by utilizing the force of the wind. Nos. 922,711, 922,712 and 922,713 are for somewhat similar arrangements with variation in the controlling and actuating mechanism.

"Signaling System," James Means, No. 922,709. This is a plan for giving the exhaust gas from the engine of a flyer a distinctive color or shade.

"Flying Apparatus," Paul F. Degn, Bremen, Germany, No. 922,756. This patent covers a helicopter, yielding wings and method of connection to rotatable concentric shafts.

"Aerial Machine," John J. Rekar, San Francisco, Cal., No. 922,952. Cylindrical trussed gas bag with ends converging to vertical edges, propellers in a horizontal plane, and propellers in a vertical plane front and rear at corners of gas bag.

"Flying Machine," Geo. W. Thompson, Kingston, Okla., No. 922,972. Aeroplane with ovoid body, side planes, vertical fin on top, suction conduits in body, front of body open to receive front ends of central conduits, with fans or propellers for drawing in the air.

"Aeroplane," John Potts, Winchester, O., No. 923,975. Two parallel planes, with frame work for power plant below lower plane, plurality of propellers on either side of motor, and with a plurality of elevating and steering "fans."

Incorporations.

The "American Aerial Adv. & Navigation Co." at 311 Citizen's National Bank Bldg., Los Angeles, Calif., has been formed with a capital stock of $1,000,000. The purpose of the company is to take up aerial publicity for nationally advertised commodities. The company will also manufacture aeroplanes, dirigibles, and spherical balloons.

The "California Aerial Mfg. Co.," of 117 W. 16th Street, Los Angeles, has been incorporated for the manufacture of airships, flying machines, balloons and accessories. The prospectus states that the company has purchased the U. S. and foreign rights "for the construction and operation of a perfected aeroplane similar in detail to that now being manufactured and sold by the Wright Brothers in France, but with several new features which will make the machine more practical and easier to manage.

"Jean Flying Machine Co.," New York, manufacturing flying machines, etc.; capital, $5,000. Incorporators, Octave Jean, Jersey City, N. J.; Charles S. Horowitz, No. 1328 51st Street; Herman Weiss, No. 185 Reid Street, both of Brooklyn.

"Rekar Airship Construction Co." Incorporators, John J. Rekar, Will F. Spencer and Felix Fruhauf; capitalization, $150,000, Portland, Ore.

"Anderson Airship Co.," New York City. Incorporators, J. J. Harper, E. J. Forhan and H. M. Browne; capitalization, $25,000. The company will promote the dirigible balloon of P. Anderson, 668 President Street, Brooklyn. The plan is for an affair 200 by 300 feet, in two halves like an egg cut in half lengthwise, with air space between the two portions. Each half will be 40 feet high. Underneath is the car with power plant.

The "Fred J. Titus Co.," Newark, N. J., has been formed by that famous bicycle racer to build, buy and sell, etc., apparatus for aerial travel.

"Standard Aviator Co.," Detroit, Mich. Incorporators, O. W. Owen, F. W. Heminger and J. H. Pray; capital stock, $20,000.

FOREIGN LETTER

Zeppelin Airship in Three-Day Trip—Monoplane Record Twice Broken and Sextupled—Wright Machine Makes World Record—Military Airship Race in Germany—New British Dirigible—England's Army Aeroplane Flies—Another Bleriot Monoplane—Flying in Japan—Aeroplane Track Racing Begins in France—French Government Prizes.

Austria.

Legagneux has not yet succeeded in getting much out of the old Farman. On May 23d he was to give an exhibition at Vienna, but was able to make only a few leaps of a hundred yards or so, and the big crowd was badly disappointed. But the grounds the syndicate behind him has provided are not particularly inviting. One is almost sure to get either into a ditch or the Danube. As a result of the failure to make attractive flights, the syndicate has been dissolved and the machine presented to the army.

The War Office has ordered a dirigible of the semi-rigid Parseval type, and it is to be delivered in September. The requirements demanded are not very onerous beside what has been accomplished in Germany. It is to have a speed of 25 miles an hour, be able to reach a height of 3,300 feet and fly 25 miles at that height, and do 150 miles without stop against the wind.

Belgium.

Much is in preparation, but there has been little flying during the past month. But while waiting for the appearance of the first all-Belgian machine, The Hague is hopeful of soon seeing some real flying. G. P. Kuller of that city has bought a Wright flyer in France, and has gone to Paris to take lessons.

China.

So far as is known, no native of China has yet joined in the modern movement, but the land of lanterns is now to figure in our news letter, for Professor Herbert Chatley of the Engineering and Mining College at Tang Shan, whose name is well known to students of aeronautics, is building an aeroplane.

Denmark.

Dr. Folmer Hansen of Copenhagen has purchased a Farman machine, and has been taking lessons at Chalons from Henri Farman. He is to fly at the Klampenborg race track, which is about 10 miles from the capital.

Delagrange has been engaged to make exhibition flights at an international exposition at Aartus Jutlands and also on the Amac military parade ground.

England.

The feature of the past month in England—except that Cody really managed to fly, after all—was the unification of the three principal aeronautical bodies and the definition of their various spheres of work. By this agreement among themselves, the aerial societies have cut out the Automobile Club from the control of aviation. The Aeronautical Society is to be the recognized authority upon the scientific side of the art. The Aerial League is to do the work of influencing public opinion, conducting the patriotic movement and education. The Aero Club is to be paramount in sport.

Whether or not this will put an end to the "Aero Club League," which the Aero Club started in opposition to the Aerial League, is not quite clear yet; but it is believed that it will, the Aero Club having got all it wanted—the "control" of the sporting side of the art. But it is doubtful whether the club will have things quite all its own way. The Aeroplane Club was not consulted, and does not like being left out in the cold. But meanwhile the Automobile Club is holding aloof.

Another interesting feature of the month was the formation of a Parliamentary aviation party, in imitation of that in France. Lord Montague, editor of "The Car," is chairman among the peers. Arthur Lee is chairman among the Commons; Cecil Harmsworth, a younger brother of Lord Northcliffe of the "Daily Mail," vice-chairman, and Arthur du Cros, honorable secretary.

This was immediately followed by a waking up of the government; but the amazing condition of the public mind was chiefly responsible for the government action. England during the past few weeks has had fits of airship panic, which, were they not so pathetic, would be amusing to outside observers. The Ministry had to do something.

Premier Asquith, to bluff the populace into the belief that the government was doing something, has appointed a "special committee." Its object is "the superintendence of the investigations at the National Physical Laboratory and for general advice on the scientific problems arising in connection with the work of the Admiralty and War Office in aerial construction and navigation." This committee is presided over by Lord Rayleigh, who, on the death of Lord Kelvin, became England's leading scientist, and its members are Dr. H. T. Glazebrook, director of the National Physical Laboratory; Major-General Sir Charles Hadden, chief of the Army Ordnance Department; Captain R. H. S. Bacon, chief of naval ordnance; Sir A. G. Greenhill, who used to teach mathematics at the Woolwich Army School; Dr. W. N. Shaw, chief of the Meteorological Office; H. R. A. Mallock, a member of the ordnance committee; Prof. J. E. Petavel, an engineer; Horace Darwin, a son of Charles Darwin, and F. W. Lanchester, the author of "Aerial Flight." Mr. Lanchester was included so that the public could see that there was at least one member of the committee who was well read on the matter. But his knowledge will make no odds. A "special committee," or a "royal commission," is the balm for all ills in England. Nothing ever results except a "blue-book," which nobody ever reads but the secretary who draws it up. But its appointment fills the awkward gap at a moment of excitement, and its efficacy lies in the fact that soon its existence is forgotten. This committee, however, will not result in a report even, for it is not to be initiative, but only to deal with problems put up to it by the army or the navy. In practice, therefore, it will prove an efficient bar to progress. It has, though, adequate funds, which seems more than the United States will do.

CODY FLIES A MILE.

None the less, England has some real flying at last. With indomitable courage, F. S. Cody, the American, stuck true to his aeroplane after the War Office had ridiculed it, thrown it back on him, and begged him to take it away and lose it. On May 4th he surprised himself by keeping up for over 100 yards. What surprised him more was that he landed without breaking anything! But Cody had never lost heart. After every smash he mended up again and started afresh with what he believed was some improvement. On May 14th Cody made it fly nearly a mile with perfect success. The height reached was about 30 feet. With one exception, Cody had never before succeeded in keeping it in the air for more than about 50 yards, and generally less. The Prince and Princess of Wales happened to be at Aldershot, nearby, on May 14th, and, hearing of the great flight, sent for Cody and asked him to fly for them. Cody consented, and, trying to better himself, by making a turn, drove into an embankment—and since then he has been repairing. Some alterations have been recently made. The front horizontal rudder remains the same. Above it has been fixed a vertical surface working in conjunction with the double vertical rear rudder. The small stability planes have been changed to the rear of the main frame, one on each side. The box tail in front of the rear rudder has been removed.

(See page 78, Feb.; page 126, Mar., '09; and Nov., '08 issue for full description.)

But Cody's was not the first flight in England. On May 1st Moore Brabazon got into the air with his Voisin, The Bird of Passage, at Shellbeach, the Aero Club's grounds at Sheppey Island. The distance made was only about 200 yards. The next day he managed about 500 yards. Short Bros., famous as balloon builders, have erected there a great shop, with no less than forty men hard at work. Thirteen machines are under construction, six to the order of the Wright Brothers, already sold. They are refusing to book further orders at present. The Aero Club has been able to arrange special railroad rates out to Shellbeach, $2 first-class, $1.25 third-class, about half fare.

Still the British authorities are doing something. They are doing it on lines explained by Minister McKenna: "We are not thinking; we are constructing!" The new Army dirigible, non-rigid, made its first appearance at Farnborough on May 4. Col. Capper and Capt. King gave her an airing—and many admiring glances—but did not attempt to fly her. When he was about to do so the people called out, "Don't; she is so young and so small!" She has been christened "The Baby"! On the 14th, however, a flight was made, and she averaged a speed of 15 miles an hour, and paid quite decent attention to her helm. Further tests were made on the 21st and 24th.

DESCRIPTION OF "DIRIGIBLE III."

"The Baby" is quite different from and one-third the size of the "Nulli Secundus," which a year ago in its hurry to get away from the Crystal Palace broke itself to pieces after rounding the dome of St. Paul's Cathedral. Instead of the lines of the envelope being parallel and stumpy at the ends, the new bag is fish-shaped. Its greatest diameter is about a qquarter of its length from the front end. From that point it curves off to a sharp nose for the front end, and tapers away behind to the tail, which is embellished with three curious triangular bags looking like cushions, two of them horizontal at the sides, and the third standing up towards the skies. It is 84 feet long, and has a capacity of 21,000 cu. ft. Two 3 cyl. 8 h. p. Buchet motors are used to drive a 6-ft. propeller. The balloonette has 1-5 of the total capacity.

Along the meridian of the envelope are attached, by a special method, a series of silk loops, each loop being independent of the next. Steel cables are attached to these loops, and the car is toggled on so as to be easily removable. The framework of the car is of hickory and steel tubing covered with silk. To the rear of the car is affixed the vertical rudder, the horizontal steering-planes extending on each side of the car immediately in front of the rudder. Motors and aeronaut are placed in the front of the car, which is mounted on skids; the single two-bladed propeller revolves between car and envelope.

The country has not been greatly relieved by the proof given during the month that the artillery can really blow the bag of a balloon to smithereens with shrapnel though it be 2,500 yards away and 2,000 feet up in the air. For the poor old balloon was captive.

The Aero Show at Olympia resulted in a loss of $15,000.

Patrick Y. Alexander has presented the United Services College at Windsor with a fully equipped laboratory for aeronautical instruction and experiment.

A Women's Aerial League has been inaugurated by Lady O'Hagan in connection with the Aerial League.

To consider the establishment of a school for the theory and practice of aeronautics a conference between representatives of the Army, Navy and Aerial League, has been called by the Army Council.

France.

WRIGHTS' PUPIL THIRD ON LIST OF BIPLANE PILOTS.

Although there has been but little flying in France since the Wrights left, apart from practice by new fliers on old machines at the different schools, among that little have been some notable achievements. More than one new record has been set.

On May 20, at Pau, Paul Tissandier, in the Wright machine, flew for 1 hr, 2m. 13s., covering a distance of 57.5 km., or nearly 35 miles. In making this splendid flight, Tissandier was never more than about 37 feet off the ground. The Wrights usually fly at about a height of 75 feet.

On May 28, Tissandier went up with the purpose of flying for just an hour, and he beat his own record. For, not able to judge the time more nearly, he came down 4 minutes after the hour, and had covered a distance of 59.65 km. But this was not officially timed. After Wilbur and Orville Wright, he has flown a biplane longest in the world.

MONOPLANE RECORD BROKEN.

In the "Antoinette," on May 6, Demanest flew between 6 and 7 km., about 4 miles, at a height of some 10 m., at a speed of 72 km. per hour. The end of April saw several flights of 6-7 km., and one not measured lasted 13 min. 23 secs., on April 30. M. Burgeat made trial flights in the "Antoinette VI."

ANOTHER NEW MONOPLANE RECORD.

Hubert Latham, on May 22, in the "Antoinette IV,." flew for 37 min. 37 sec. at an average speed of 72 km. an hour. He was at a height of 30 m., and had the monoplane under perfect control, taking all the turns with great ease. A few days before he won the first A. C. of F. prize for a novice's flight of 500 meters. On June 5 he flew for 1:07:47, beating previous record of 11 minutes held by Bleriot.

In the early days of the month, Comte de Lambert was at Pont Long teaching a German pupil, Ganz de Fabrice, an engineer and sportsman, in the old Wright machine, which has not yet got into the museum at Paris, for though the old machine is pretty decrepit by this time, it goes very well with the new engine. Later in the month, Lambert established himself at the Napoule race track near Cannes with the new Wright. On the 17th he made his first exhibition flights there, and the "Petit Chevaux" felt the effect, for all the fashionable mob deserted the tables to witness the flying. After about 400 m. straight, Lambert made several circles of the track and finished up with two figures of 8.

NEW BLERIOT XII.

Bleriot, giving his speedy No. XI. a rest, has been trying out his new No. XII. This monoplane is slightly larger than the racer. Its total surface area is 23 sq. meters. The length is 8.5 meters and a spread of 9 m. It has a single 2-bladed propeller, driven by chain from a 35 h.p. E. N. V. motor. The weight without operator is 300 kg.

Guffroy at Buc has got over most of his difficulties with the R. E. P. monoplane, and during the month has made several good flights.

Santos Dumont at Issy has been trying hard, but has not succeeded in making his little "Demoiselle" beat her record of 2½ km. Almost all his recent trials have ended in some slight damage. The most serious was on May 15, when in trying a turn he drove one of the wings against the ground and smashed it.

Henri Farman's best flight at Chalons during the month was on the 11th, 8 km. On the 15th he took up a passenger weighing 200 lbs. and flew 800 m.

AEROPLANE RACING BEGINS IN FRANCE—SPEED CONTESTS NOW SUPERSEDE DURATION FLIGHTS.

What was to have been the great event of the month turned out a great fiasco. This was the opening of "Port Aviation" as the flying grounds at Juvisy are now called. The syndicate of capitalists who are running it advertised nine entries, but only three machines actually came out on the track. Prizes were put up, railroads ran excursions and 30,000 people were on hand. Despite the wind Delagrange was out and made four straight flights and a round of the course. The people got insistent for a race and the crowd became unmanageable. Rougier tried to make a competition, but the crowd swarmed so thickly that he could not.

The last Saturday in May the second meet was held, and it was a great success. No less than nine flights were made during three hours' entertainment. Three aviators took part—all on Voisin machines. A prize of 1,000 francs was won by Delagrange, who flew the circular kilometer in 1 min., 40 3/5 sec.; De Rue won place money, 500 francs, and his time was a second slower; Rougier showed third in 1.53 2/5.

On the first round Delagrange was almost blown against the grandstand, but managed to steer away in time and get back over the course. The slowest time made by Delagrange was 1.53 3/5.

The following day saw more excitement. With machines exactly alike, with the same Antoinette motors, Delagrange and De Rue fought it out. The contest resolved itself into seeing who could cut the corners the closest. Delagrange lowered his kilometer to 1.18 3/5, beating De Rue's best by 5 sec. The course was marked by four posts outside which the flyers had to keep; each side of the square represented 250 meters. Delagrange thus beat his own record of the day before by 22 sec., and won at the same time the first, so far as known, speed prize, that of Ch. Stern of 1,000 francs to the man who made the fastest circular kilometer by June 3.

Rougier is making rapid progress, and seems likely to take as prominent a rank as a flier as he held as an automobile racer when with the Lorraine-Detrich. On May 22d he made eleven circuits of the Juvisy course in his Voisin machine, covering about 30 km. at a height of 20 m.

The Ligue has ordered two new Wright machines for the use of its pupils.

Another Englishman has gone to France to learn to fly. This is G. B. Cockburn, of Taynton, Gloucestershire, who has bought a Farman and is at Chalons.

FRENCH GOVERNMENT PRIZES.

The French Government has decided to offer the following prizes out of its grant of $20,000 for aviation: $2,800 to the French aeroplane making the longest flight of the year ($1,000 to the pilot, $800 to the builder of the apparatus, $600 to the builder of the motor, and $400 to the designer of the propellers); $1,800 to the aeroplane which has stayed longest in the air, and $1,600 for the dirigible making the best voyage.

A. C. F.'S PRIZES.

The Aero Club de France is offering out of the government subsidy $1,000, $500, $200 and $100 to the four aeroplanists who shall stay longest in the air. The entrance fee is $20. The Club just now is very proud of itself. It has been granted by the President of the Republic the coveted decree of "recognized as of public usefulness."

Not to be behind the T. C. F., the A. C. F. has appointed a committee to study the question of route signs for fliers.

Another new society, the Union des Aviateurs de la Seine, has been formed.

Adolphe Clement has entered his new Clement-Bayard dirigible to compete for the prize of $2,000 put up by Henri Deutsch de la Meurthe in 1906 for the first airship which could make 200 km. in a closed circle.

Tests were made at Gennevilliers on May 19th of the 80 h. p. engine which the Dietrich firm has made for Walter Wellman's airship "America." In addition to gasoline, a mixture of hydrogen and gasoline, an idea of Melvin Vaniman, was tried, and it was found to give more effective results than the gasoline alone. If Wellman keeps to his program he ought soon to be on his way to the North Pole.

The "Wright Craze" has taken a new form now in France. Visitors to the places where Wilbur flew are paying extravagant prices for the privilege of sleeping in the same bed, eating from the same plate and drinking from the same glass as Wright used. Nothing like it has been known since the days of the great Napoleon.

Germany.

The honors of the month belong to Count Zeppelin. In his new dirigible, "Zeppelin II," he amazed the whole world by a flight of 850 miles in 38¼ hours. Starting from Friedrichshafen on Saturday evening, May 29th, he set a course apparently straight for Berlin, distant away about 500 miles on the airline. Whether he intended to go to the capital is not known. All he will say himself is what he said to the Kaiser, "I never said I was coming to Berlin." But the general belief is that he really intended to fly to that city and back again. For some reason, however, when he reached Bitterfeld, about 80 miles short of the capital, he turned back. There are some who think that he merely intended to give a demonstration of what he could do, and would not allow the German Army to share in it because they have now turned their back on him.

Count Zeppelin was himself in charge, and he had with him two engineers and a crew of seven. Not a word had been said beforehand that he had any intention of attempting a sensational trip, and hardly a soul was out at Friedrichshafen to give him a parting cheer. The weather was distinctly bad, rain was falling and kept on most of the night, and there was a strong headwind. All through the night, however, despite this, the great airship kept speeding on over Wurtemberg and Bavaria. On the way he passed over the towns of Treuchtlingen, Nuremberg, Erlangen, Bayreuth, Munchberg, Hof, Plauen, Werdan, Zickau, Gera, and Leipsig. Leipsig was reached at 5.20 p. m. on Sunday. It may be that it was then that Count Zeppelin saw that he could not make Berlin until after nightfall, and so determined to give up the effort to get there. It is also possible that by this time it had become obvious to him that he had not started with a sufficient supply of fuel for a longer trip.

After maneuvering over Leipsig for close upon an hour to the great delight of the people, the Count headed on again towards Berlin. Bitterfeld was reached at 7.20. There he threw out a card, "I have decided to return." And the monster dirigible turned its nose to the south.

Meanwhile the Kaiser and all Berlin, having learned from the newspapers that the Count was on his way to that city, were all out on the Templehof field awaiting his arrival. Wilhelm had the soldiers out, and a large space was cleared for Zeppelin to land in, and the only person in the city whose eyes were not glued to the sky was the chef who was preparing the supper that was to be the Emperor's welcome. When, just after dark, the news came that the airship had turned for home, the Kaiser, the Empress and the Princess left the field, but the crowd waited on till after midnight.

For the return journey Zeppelin took a different route and passed over Schweinfurt, Wurzburg, Heilbron, Stuttgart, Essingen, Plochingen, to Goeppingen. At the last-named place, which was reached on Monday morning, a descent had to be made for gasoline. Unfortunately, in landing, the airship was blown against a tree and somewhat badly damaged about the prow.

Unable to complete his journey without repairs, the Count telegraphed home for his workmen. The next day the men were able to patch the dirigible up temporarily and sail it home. They left Goeppingen at 3.20 on Tuesday afternoon, followed by the Count in an automobile. About 40 miles from home another descent had to be made for supplies, much having had to be ehrown overboard in order to keep up in the air. The trip could not be resumed until after midnight, but Friedrichshafen was reached by daylight Wednesday morning. The trip lasted about 3½ days. The airline distance to Bitterfield and return is 609 miles, but the circuitous route probably adds something to this.

Count Zeppelin received a telegram of congratulation from the Kaiser in which his Majesty said "Thousands of soldiers missed their holiday (Sunday) waiting to assist you, and I trust you will make up for the disappointment. I had hoped to see you a guest at my palace, where rooms had been prepared and a meal with a loving cup was ready for you in the officers' mess. I hope to see you soon in Berlin."

The Count replied: "I never said I was coming to Berlin. Somebody sent a fraudulent despatch. The reason for my non-appearance in Berlin was fear that the supply of benzine would not suffice to take me to Berlin and back to Friedrichshafen. I hope in six weeks to be able to report to you in Berlin with my repaired airship." The Kaiser suggested August 26th for the next attempt.

This flight entirely eclipses the last big flight of the Count made in the "Zeppelin I," on April 1 and 2 last, when he sailed from Friedrichshafen over Munich to Dingolfing and back, and was in the air for 18 hrs., 28 min. The trip lasted 39 hrs., 39 min. Deductions are made for all night at Dingolfing and luncheon at Munich. On April 5th the "Zeppelin I" was up for 11 hrs., and on the 6th for 11½ hrs., without stops.

Whatever may be its cause, and several explanations have been suggested, some serious disagreement has arisen between the German War Office and the Zeppelin Co. The War Office has now definitely refused to purchase more than two "Zeppelins." The company has, during the month, been approaching various towns with a view to selling for passenger traffic the Zeppelin airships now under construction. Cologne, Lucerne and Dusseldorf are said to be purchasers. Two "Zeppelins," it is declared, are to take up a regular service between Lucerne and Dusseldorf. A third is to be used for excursions round the Riga. M. Colsman, Zeppelin's agent, states that 600 trips a year could be made at a cost of $425,000.

GERMAN AIRSHIP RACE.

The first race between airships has taken place in Germany this month. On May 22d the "Gross II" and the "Parseval II" had a six-mile-and-back contest together over Berlin. The result was a dead heat. Each airship took exactly 30 min. in doing the 12 miles and the turn.

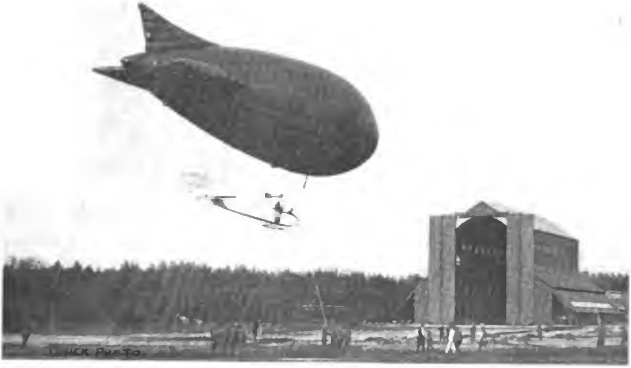
On the 25th both the "Gross II" and the "Parseval II" were flown for the inspection of the Kaiser. Wilhelm was reviewing cavalry at Doberitz, and the airships were sent with despatches from Tegel 10 miles away. The trips were quite successful. The "Gross II," it is said, has now been fitted with wireless telegraphy apparatus, but that so far the experiments have not been a success. None of our correspondents say what precautions are taken against the spark.

The new "Gross III" is 70 m. long and will have two motors of 100 h. p. each. A new smaller airship with one motor of 100 h. p. is to be built for dispatch service.

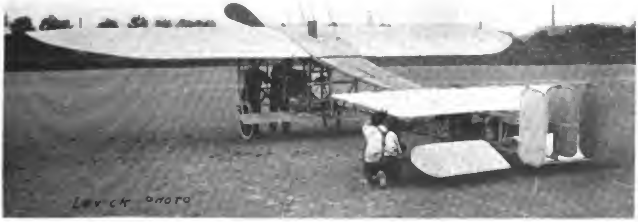
A company, called the Flugmaschine Wright Gesellschaft, has been formed in Berlin with $75,000 capital to build Wright machines. The Krupps, Allgemeine Electricitats Gesellschaft, the Motorluftschiff-Studien-Gesellschaft and the bankers, Delbruck, Leo & Co., are the chief shareholders. The Wrights sell the company for 15 years full rights for Germany, Sweden, Norway,

The Eulers of Frankfort have bought the Voisin rights in Germany.

In connection with the exhibition at Frankfort in the fall, the Technical-Scien-



England's "Dirigible III"



Bleriot XII

tific Committee is arranging a competition which they hope will produce a new metal as light as aluminum but with greater "life," and therefore more suitable for aeronautical construction.

Italy.

Italy has solved the question of the "control" of aviation by the appointment of a mixed committee similar but even more representative than that in France. It is formed from the Aeronautic Society, the Automobile Club, the Aviation Society and the Touring Club.

Japan.

According to the Japan "Times," Isaburo Yamada, who was in charge of the military aeronautical experiments in Japan away back in the Chino-Japanese War in 1894, has constructed an aeroplane and made flights at Tokio.

CLUB NEWS

(Continued from page 12)

of directors, officers and two members of Aero Club of California, two members of Pacific Aero Club, and one each from two other cities of the state.

Mr. Ferris, president of the club, is the owner of two balloons which he has placed at the disposal of the club members without charge for the service.

It is the hope of the organizers of the club to avoid using it in bringing personal profit to any individual member. The scientific and inventive progress which should rightly be encouraged it hopes to encourage only through the aero clubs, and should it ever vote money for that purpose it is to be handed over to the organizations in whose province it rightly belongs. In the main, the Cal. Balloon Club proposes to co-operate in securing data about air currents and similar information, and to establish, for the assistance of balloonists, maps and records which will save much time in preparing for trips.

The Air Craft Club of Peoria was launched on May 4 at a meeting at the Creve Cocur club, and has started sailing under most favorable circumstances. The following officers have been elected: President, Eugene Brown; vice-president, Harold Plowe, and secretary and treasurer, Leslie Lord. The president, together with Dr. George Smith and Ross F. Walker, were appointed to draft by-laws. Those who signed as charter members of the first society Peoria has had to study the science of the air were: Eugene Brown, Harold Plowe, Leslie Lord, William R. Bootz, Ross F. Walker, George E. Smith, Dr. Arthur G. Smith, Deloss S. Brown, Dr. Frank E. Baldwin, Percy A. Folsom, W. N. Kilbourn, and L. C. Worley.

The club is organized to "engage in the pursuit of Aeronautics," the intention being to start interest in ballooning first and then take up flying machines.

TALKS WITH INVENTORS

(Continued from page 6)

REQUIREMENTS OF APPLICATION.

The application consists of a petition addressed to the Commissioner of Patents upon a printed form, and specifications embodying a preamble, statement of the object and nature of the invention, detailed description with reference to drawings, ending with summaries called claims, in which that part of the invention which is considered original is particularly described.

The preparation of an application is a task requiring practical skill and technical experience, of which any inventor can convince himself by consulting the book on rules issued by the Patent Office. The law requires that drawings be furnished in all applications for patents, where the invention will admit illustration. The drawings must be made on pure white paper calendered and smooth, and corresponding in thickness to three ply Briscoe brand. The size of sheet must be 10x15 inches, with a marginal line of one inch around the same, leaving proper space for the printed heading, and for the name of the inventor and two witnesses. Every line and letter, signatures included, must be absolutely black, clean, sharp and solid. The scale in which a drawing is made ought to be large enough to show the mechanism without crowding. Different views should be consecutively numbered, the letters measuring at least one eighth of an inch in height, and placed so as not to interfere with lines of the drawing.

Inventors make no mistake in having their inventions well illustrated. A well executed drawing brings out the invention clearly, will make the prosecution of the application much easier, and may secure more satisfactory results. It often plays an important part in cases of suits affecting the validity of patents. A well illustrated invention prevents its being confounded, and eventually assists the inventor in securing the aid of capital or to sell his invention.

An applicant or an assignee may prosecute his own case, but he is advised unless familiar with such matters to employ a competent attorney, as the value of patents depends largely upon the skilful preparation of the specifications and claims.

An inventor can, however, materially assist his attorney in enabling the latter to do justice to his client by furnishing an intelligent, clear and detailed description accompanied by a sketch or model.

(To be continued.)

TRIP OF PHILA. II

(Continued from page 5)

Woodbine, N. J. Dr. Simmerman acted as pilot, while in the basket as passengers were Dr. Eldridge, Mr. Thomas Rose, and Mr. Geo. Benz.

While traveling over mountain, hill and vale, river, lake and stream is in itself a treat most rare, not the least of the appreciated pleasures of ballooning is the royal and generous manner in which aeronauts are always received when landing in strange places. While the party was still in the basket, they were seized by the superintendent of the Baron de Hirsch Agricultural and Industrial School, Mr. Henry H. Gellor, who insisted that they be his guests, and seeing that they needed assistance, blew his whistle for the boys of the school, who responded immediately to this call. Trees were cut away and the land cleared in such a manner

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that they will ever remember kindly and gratefully the services rendered.

At the cottage, Miss Lidia Cantor, the matron, assumed the responsibility for the party, and such a generous hospitality I had never witnessed before, demonstrating that even when among strangers "the whole world is kin."

They stayed at the cottage for the night, and the next day were breakfasted by Miss Cantor and Mr. Gellor. And at noon were dined by the boys who had rescued them. In the afternoon a Russian tea and informal reception were given by Mrs. M. Z. Bayard, the charming wife of the mayor of Woodbine.

This with a carriage ride and banqueting from the time of our arrival to our departure makes us realize that as the sweetness of the woodbine is due to its inherent properties, so the graciousness and fragrance of the Woodbine of New Jersey is due to its charming people.

I would suggest that all aeronauts seeking a landing near the coast would select the town of Woodbine as a landing place, and especially the Baron de Hirsch Agricultural and Industrial School.

NEW WRIGHT PATENTS

(Continued from page 8.)

the application of friction-creating or holding devices for the purpose of holding the parts in the positions in which they are set, until moved out of such positions by means of the operating lever or levers substantially as set forth.

"8. In a flying machine, having aeroplanes with adjustable portions operated by a cable, and vertical rudders operated by a further cable or cables, connecting the said cables to drums mounted on a common axis, handles or other means for operating

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TRAVELS IN THE AIR (James Glaisher, Flammarion, Tissandier, etc.), 125 illusts., royal 8vo., cloth, London, 1871 $6.00

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DONALDSON & GRIMWOOD, A True Account of Their Last Balloon Voyage and Tragic Death in Lake Michigan, thin, 12mo., wrappers, illust., Philadelphia, 1875 (very scarce) $3.00

THIRTY YEARS IN THE CLOUDS, with Observations on Thunder and Lightning, Formation of Rain, Hail, Snow, etc. (John Wise), 8vo., pamphlet, 1870.....$5.00

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said drums together or separately as desired, substantially as set forth.

"9. A flying machine having superposed aeroplanes with the tips of same adjustable, said tips connected together by cables, so as to work in unison in opposite directions in combination with front and rear vertical adjustable rudders, or one or both of them and a fixed vertical vane, substantially as described and illustrated in the accompanying drawings."

The U. S. patents are Nos. 821,393 and 908,929.

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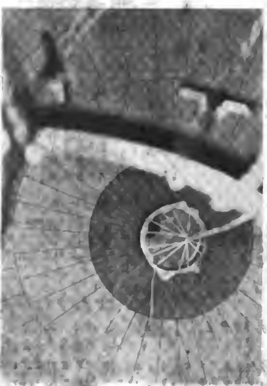

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THE AMERICAN MAGAZINE OF AERIAL LOCOMOTION

VOL. 5
NO. 2
AUGUST '09
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HUBERT LATHAM AT THE CAMP OF CHALONS IN HIS "ANTOINETTE IV"

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PROGRESS IN AVIATION SLOW.

Waive for the moment all this flying enthusiasm, and consider just what progress has really been made. Though the Wrights really began successful flying with their flights of 1903, the popular belief and interest in the art dates with the little jump of Santos-Dumont in the fall of 1906, when the world went wild over his grasshopper-hop as compared to the bird-flights of the Wrights three years before. Since 1906 how many men have really flown? Those who are known are only Farman, Delagrange, Cody, Moore-Brabazon, Bleriot and now Latham and Count Lambert in Europe; Curtiss, McCurdy, Selfridge, F. W. Baldwin and the Wrights in America. In Europe there are one or two others who have made short flights, and then, too, Calderara, a Wright pupil, in Italy. At the moment there are only the Wrights, Latham and Bleriot doing any real flying. This does not seem much like progress in these three years and more. How far did the automobile advance in three years? Somewhat faster than this, indeed. One's enthusiasm easily flies away.

The prizes offered abroad have caused an enormous amount of experimental work, and it is to be regretted that such encouragement is not in America.

APPRECIATION NOT A LOST ART.

"I would like to praise 'Aeronautics' through its editor for its noble work, which has improved to the delight of its subscribers and those who perchance come across a stray copy. The instruction given every month is a meal that is indeed very palatable—and reaping a big harvest, which those interested in it have found out. Wishing you and your magazine continued success, I am, yours very truly, R. P. D."

"The way in which I wish to speak about "Aeronautics" reminds me of the gentleman who was asked how he felt. His reply was, 'If I felt any better, I would see a doctor immediately.' That expression fits your magazine perfectly. All the rest of the magazines treating on aeronautics are in the shade. It does not treat too much of either ballooning or aviation. In every respect I think it is perfect.—S. A."

NEWS FROM THE PACIFIC COAST

By Cleve T. Shaffer.

E. M. RAYBURN, of Sausalito, is ex-
Claude de Haven, Robert Bergfeld
perimenting with a glider.
and A. C. Watkins of San Francisco are also having a great deal of sport and experiment with a glider of the familiar two-decker type out in the sand dunes near the beach.

Membership in the Pacific Aero Club is increasing. The club expects to give an exhibition of moving pictures, gliders, models and large sized machines about the first of August.

An interesting feature of the weekly meetings, is the short talks or lectures and discussions that have been arranged; these add a great deal to the knowledge and entertainment of the members. Last week's very instructive argument was between Messrs. Geo. Booth and Chas. Bradley, the former arguing for the propellor to be placed in front of the aeroplane, and the latter for placing it in the rear. Both gentlemen have had considerable experience with models.

Messrs. Carl Wolf and August Becher of Oakland, are experimenting with a triplane, 220-ft. surface, planes 19 ft. 8 in. by 4 in. The machine has a double front rudder not superposed, each side capable of independent movement. Lateral stability is also had by warping the wings a la Wright. Launched on its skids from a hillside chute or track, flights up to 200 ft. have been made.

A. L. Smith of Los Angeles, has a biplane two-thirds constructed, 40 by 7, 6 ft. between planes; the engine is to be 60 h. p.

H. La V. Twining, President of the Aero Club of California, will build a large size man-carrying ornithopter this summer.

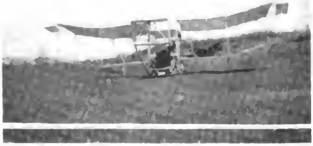
Mr. A. C. Watkins of San Francisco, is experimenting with a monoplane glider.

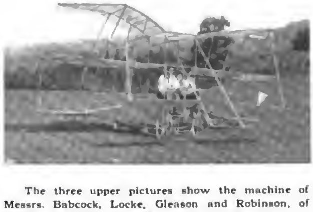
Mr. Claude de Haven will build an aeroplane with a patented equilibrium device of Mr. Watkins'.

Messrs. Wolf and Becher have repaired their glider for flight.

Messrs. Arnold and Hiniker of the Pacific Aero Club, are building a large size model of a machine which will incorporate the principles of the helicopter, the aeroplane and the dirigible. The model, of neat workmanship and fine lines, is of fish shaped design. The helices revolve in two separate wells contained in the body. Additional aeroplane surfaces are placed on the lower sides.

Prof. Jos. Hidalgo lectured on Aeronautics at the meeting of the Pacific Aero Club, July 6th. The lecture of Cleve T. Shaffer on the state of the art and the application to aerial warfare was a great success.





The three upper pictures show the machine of Messrs. Babcock, Locke, Gleason and Robinson, of Hammondsport, N. Y. (See story elsewhere in this issue.)

The lower photo shows the Becher & Wolf Glider, of California.

WRIGHT CELEBRATION AT DAYTON

By Our Special Correspondent

DAYTON, June 18.—To-night closed the two-day celebration for which the whole of Dayton laid aside business to do honor to its two most illustrious sons. Buildings, both public and private, were profusely decorated, the streets were lined with pillars of staff, and at night the city was illuminated with thousands of lights.

Aside from the presentation of the medals, the chief feature was a monster parade illustrating the developing of transportation. This was headed by an Indian runner and ended by a Wright aeroplane.

To-day the nation, state and city paid tribute to Wilbur and Orville Wright. Amid a fanfare of brasses, surrounded by soldiers and the militia, the Wrights drove up to the platform where General James Allen, Chief Signal Officer, presented the medals authorized by Congress. At the same time were given the Ohio state medals by Governor Harmon and Dayton's diamond-studded medal by Mayor Burkhart.

The Congressional medals are gold plaques, designed at the Government mint. On one side are the profiles of the Wrights with their names and the inscription "In Recognition and Appreciation of their Ability, Courage and Success in Navigating the Air." The coat of arms of the United States also appears on this side. On the reverse side is an allegorical figure, carrying a torch of knowledge, flying through the clouds and the inscription from Isaiah, "Shall mount up with wings as angels."

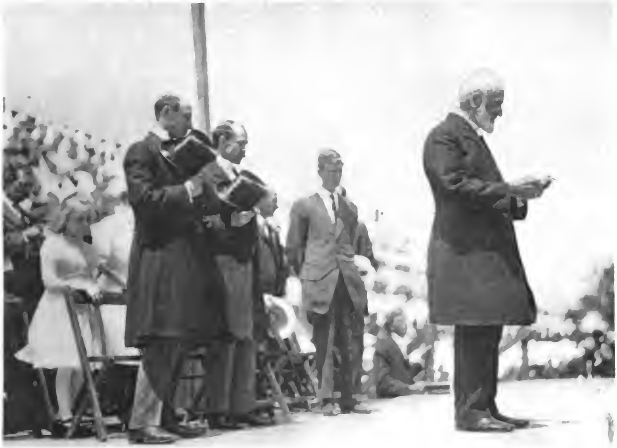


Photo by Pa. [illegible]

Invocation by Bishop Wright, Father of the Famous Brothers, at Beginning of Ceremonies.

Yesterday a reception was held, the Wrights lionized in public speeches, and the keys of the city presented by heralds. The closing feature of the day was the proclaiming to the four winds that the "festivities of the city in honor of her distinguished sons are now open and all men are bidden." Thousands cheered when,

(Continued on page 79)

ON WRIGHT'S TRIALS AT FT. MYER

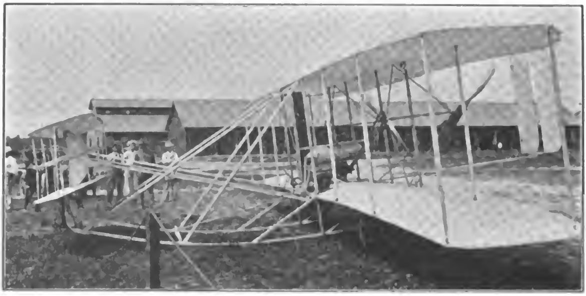
By Harold A. Brown.

TO one only casually interested in the science of aeronautics, it might seem that the trials of 1909 would only be a repetition of those of 1908, and that if one saw the earlier ones that there would be very little novel in the later ones.

However, a number of facts should be borne in mind. In the years 1908 and 1909 both of the Wrights have had vastly more experience in the practical handling of a power-driven machine than in all of their previous experience. It is well known that no matter how perfect the design of any piece of machinery may be when first designed, that in good extended practical use that some small minor defects are bound to crop out; or to put the matter in another way, improvements are bound to suggest themselves.

Then again, during the extensive sojourn of the brothers abroad they have had excellent opportunities to observe the methods of construction used abroad, and also to acquaint themselves with the practice in light weight gasoline motor building as exemplified by the foreign makers.

To the person who expects to see any radical changes, the first glance at the 1909 machine is disappointing. In fact, at first sight nothing seems to have been changed. However, a closer inspection will show that the method of staying the rear rudder has been modified, and that the skids have been greatly increased in height.



Orville Wright's Machine at Fort Myer

On the last year's machine, a wire stay, or guy, led from the outward end of each strut to the plane on either side. Thus the struts were stayed against sidewise motion. A wire stay extended from the rear end of the lower strut to the upper end of the front strut, and this stayed the rudder against vertical motion. To complete the vertical staying another stay led from the rear end of the upper strut to the front end of the lower strut. At the centre of this stay was placed a length of closed spiral spring, the object being to allow the lower end of the rudder to rise by the stretching of this guy in case it struck the ground in landing.

This year a solid wire is used in place of the elastic stay, and the likelihood of the lower end of the rudder touching on making a landing is minimized by the use of much higher skids.

The horizontal bracing of the struts is also somewhat modified. The spread of the main stays is somewhat diminished, and two supplementary stays run from about half the length of the stays to the anchorage point of the main stays on the plants. A bridle crosses both stays midway between the ends of the short stays in order to prevent undue motion or sagging in case of loosening of the stays.

On an examination of the engine the system of cooling and carburetion will be found to be the same as last year. However, in place of the friction driven direct current magneto formerly employed to furnish current for the make and break igniters, a Bosch geared magneto with shuttle wound armature is employed. This is a decidedly practical improvement, since it allows the motor to be started without the aid of a storage battery. It may be remarked here that on the machines used by the Wrights abroad a high tension or jump spark magneto was employed, but experiments showed that the make and break system gave about ten per cent more power than the jump spark on the motor employed by them; hence as the motor used was equipped for make and break, it was decided to use this type of ignition. Within the last few days the make and break mechanism has been considerably improved. It is possible that in future motors spark plugs will be used.

The early trials of the machine at Ft. Myer certainly should serve as an object lesson in patience and perseverance to both inventors and experimenters. To begin with, considerable difficulty was experienced in getting the motor to run properly when first put in place on the machine. This was perhaps largely, if not entirely, due to the ignition, and almost two days were occupied in correcting this difficulty. Owing to this difficulty and unfavorable winds, the first attempt at flights did not occur until the 29th of June. At the first trial the machine went about two hundred feet and suddenly veered to the right, scraping the right wing. Orville immediately stopped the motor and descended from his seat. In striking the ground the cloth of the wing was torn, and Taylor returned to the aeroplane house getting a hammer and needle and thread. With this the injury was repaired in a couple of minutes. A council of war was held and the machine started again. This time it went straight forward about the same distance as at first, and as it showed no tendency to rise the motor was again stopped. At this point Wilbur returned to the shed and came back with some iron and a couple of clamps. The iron was then clamped to the front rudder struts, the object being to weigh down the forward end, which showed an undue tendency to rise.

The third trial was not much more successful than the first two. At this point the motor was started up where it stood, and the R. P. M. were taken by Orville with a stop watch and counter. Then after some slight adjustments to the motor the machine was returned to the starting rail and the motor started. By this time it was well after sundown, and there was now hardly any remaining wind. The motor seemed to be running much better than it had at any of the previous trials, but as yet did not appear to be up to the speed that it showed in 1908. This trial, however, was somewhat more successful. Orville succeeded in making a complete circuit of the field, although the machine did not as yet show the life that had been shown in previous trials.

The next day the motor seemed to be running much better when it was started up preparatory to launching, and on the start it seemed to be going much better. However, as the end of the field was reached and the turn was being made the left wing struck the ground, and the power being shut off, the machine settled and broke one of the skids. This stopped the experiments for the day.

On July 2, however, the flights were much more successful, the motor seeming to be in its old time form, and two flights were made—one of seven minutes and the other of about twelve. In the second, either the motor stopped itself or was stopped, and O. Wright glided to earth. A large bush was mistaken for a clump of weeds, the wing was pierced, and the machine slewed around, breaking off the skids.

Although not apparent to the eye of the casual observer, the area of the planes have been materially reduced, to about 36 by 6 feet, so that at least three more miles per hour are necessary to keep the machine in the air than last year. The reduction in area is about 90 square feet. Since the first experiments were commenced two additional lengths of rail have been added to the starting track, or in all about twenty-four feet. The manner in which the many difficulties which the Wrights have encountered in this year's trials have been met, recognized, and one by one conquered is probably the secret of their success, and one cannot but feel that their efforts to fulfill the government contracts must eventually lead to success.

---

* A complete description and analytical discussion of the 1908 machine was given in the September and October, '08, issues.

PROPELLER MATHEMATICS FOR THE KINDERGARTEN CLASS—II*

By John Squires, M.E.

CHIEF OF PHYSICAL LABORATORY, E. R. THOMAS MOTOR CO.

IN dealing with the proposition that the fact of one propeller (or machine to which the propeller is attached) having a higher thrust per h. p. against a fixed point than another does not signify that the first propeller (or machine) will travel faster through the air than the one with the lower thrust per h. p., it will probably be easier to follow the demonstration if concrete values are assigned to the several variants to give them quantitative individuality, especially when considering the effect produced by changing the value of the variants.

It is of course remembered that the air-moving type of propeller is being considered, and before taking up the proposition of propellers in flight, it is advisable to analyze the function of each variant in utilizing the power put into a stationary propeller.

Let it be considered that all the power input is used in producing work, as to consider less than perfect efficiency would complicate the demonstration too greatly for the present purpose.

Accordingly, resuming consideration of propellers thrusting against a fixed point, and supposing that we have a theoretically correctly designed propeller that we can adopt as a standard for analytical purposes and a base from which to consider variations, and in the abstract this is simply a machine doing useful work in moving a certain weight (in this case the weight of the air moved) a certain distance (equal to the pitch multiplied by the speed of revolution) in a certain length of time, and, therefore, it is possible to take the algebraic expression for work and factor it to include the functions of all the variants (or elements) involved in producing this work.

The formula "reductum" for work being $\frac{1}{2} m v^2 = W$, (in which W represents foot-pounds) or a better expression for the present purpose, $\frac{m v^2}{2} = W$. This can be functioned for the element of weight by converting the mass into its factors, and then becomes $\frac{w v^2}{g 2} = W$, or in its usual form, $\frac{w v^2}{2 g} = W$. As w represents the total weight involved, this must necessarily be composed physically of a number of units; so let a cubic foot of air be considered as a single unit called w, and w then consists of w_1 multiplied by the total number of cubic feet of air moved in a certain unit of time. Let this total number of cubic feet be called C, and by substitution the formula becomes $\frac{C w_1 v^2}{2 g} = W$.

Before the formula can be factored further to functionate the effect of the four variants, it is necessary that each of them be represented by a symbol.

The power involved (or its equivalent expression, work) is already represented by W. Let the speed of revolution per second be represented by R, the area throughout which the propulsive effect is exerted by A and the pitch in feet by P, and we can proceed to factor for the functionate value of each of these in the formula.

Looking for an opportunity to factor further, it is seen that the individual symbols C and v in the formula are the results of combinations of sub-values. Factoring C for its components, it is found that the total quantity of air moved in a unit of time is dependent on the pitch, the area and the number of revolutions in that unit of time, and making the indicated substitution, the formula reads

$$\frac{(A P R) w v^2}{2 g} = W.$$

As v equals the velocity at which the mass travels and is the product of the pitch multiplied by the speed of revolution, another substitution can be made and the formula completely factored out becomes

$$\frac{(A P R) w_1 (P R)^2}{2 g} = W,$$

which simplified is

$$\frac{A P^3 R^3 w_1}{2 g} = W,$$

or expressed as an equation

$$\frac{A P^3 R^3 w_1}{2 g W} = 1$$

and we now have an equation which explains the function of each of the variants in converting the power input into work output, and permits the intelligent determination of the correct relative values of these variants toward each other in actual practice.

It is now possible to create an actual standard properly functioned propeller for the purposes of comparison and such values as are apt to occur in actual practice may be assigned to as many of the variants as possible. So, taking, say, 20 h. p. at 20 r. p. s. (1,200 r. p. m.) and an area of 50 sq. ft. (equal to about 8 ft. diameter), all of which are within present practical limits, and it is possible to determine the correct value for the pitch, by substituting the numerical values for the corresponding symbols in the equation.

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[*] The first "lesson" was given in the June issue, 1909.

No value has yet been assigned to the symbol w_1 in the equation, but as we are dealing with air in units of cubic feet, the value of w_1 is, therefore, the weight of one cubic foot of air, which can be taken approximately as .073 pound, although in practice this may vary considerably, depending on barometric and thermometric differences, and the velocity with which the air is being handled. The numerical value of g is, as usual, 32.16.

Now having numerical values for all of the variants involved except the pitch, the equation can be stated arithmetically thus:

$$\frac{50 \times P^3 \times 8000 \times .073}{64.32 \times 11000}$$

which solved for $P^3 = 24.2$, makes $P = 2.893$ and completes the full set of correct proportional values for the elements of the standard propellers thus:

$H.P. = 20$
$R.P.S. = 20$
$P. = 2.893$
$A. = 50$

To get complete data for comparison, let the thrust be calculated in actual quantity also, and, remembering that the propeller can be designed to give the effect of air blowing against a normal disk, the formula $P = S\ V^2\ .003$ can be used by altering the coefficient to correspond with V in feet per second, and substituting the symbols we are using here for the sake of uniformity and using T as the symbol for thrust it becomes

$$T = A\ v^2\ .00139.$$

Applying this formula to the standard propeller gives

$$50 \times (2.893 \times 20)^2 \times .00139 = 232.67 \text{ lbs.,}$$

or 11.6 lbs. per h. p. As the proposition under consideration requires two propellers of varying thrusts per h. p., another propeller having a decreased thrust per h. p. can now be prepared for comparison.

Noting from the table (Variation 7 in the article in June issue) that an increase of pitch reduces the thrust per unit of power, let the same h. p. and speed of revolution be maintained and it is evident that the area will have to be reduced.

As doubling the pitch without altering the power or speed of revolution would reduce the area to one-eighth of its previous size (this effect is not stated in just this way in the table, but can be deduced from Variation 7), it will do as well to increase the pitch any amount that will not vary the working conditions too greatly, and accordingly let the pitch be made 3 feet and solve the equation for A, thus

$$\frac{A \times 27 \times 8000 \times .073}{11000 \times 64.32}$$

and A is found to be 44.87 sq. ft., or a diameter of approximately 7½ ft.; and calculating for thrust

$$44.87 \times (3 \times 20)^2 \times .00139 = 224.18,$$

or 11.2 lbs. per h. p.

With theoretically perfect efficiency, we now have the equivalent of two normal surfaces, one having an area of 50 sq. ft. and being moved at a velocity of 57.86 ft. per second with an expenditure of 20 h. p., and one having an area of 44.87 sq. ft. and being moved at a velocity of 60 ft. per second utilizing the same h. p.

Now, presuming that the total head resistance of the machine (whether composed of area and drift in a dynamically-sustained machine or area alone in a buoyancy-sustained machine) to which the propeller is attached, is equal to the resistance caused by a surface of 20 sq. ft. area, normally presented, this resistance is proportional to the square of the velocity of flight v^2 and produces slip in the propeller.

Representing the factors of the initial propulsive force in the propeller by the symbols A for the area against which the force is exerted and v for the velocity at which A is being moved, it is apparent that this velocity will be decreased by any additional area moved in proportion to the added resistance which, as we know, varies with v^2, consequently symbolizing the added area by a, the resultant velocity of the combined resistance is expressed by the formula

$$\sqrt{\frac{A\ v^2}{A + a}} = v$$

in which A represents the surface against which the propulsive force is exerted and $A + a$ the surfaces presenting resistance to propulsion.

Stating arithmetically the resultant velocity of the machine with the standard propeller attached, thus,

$$\sqrt{\frac{50 \times (2.893 \times 20)^2}{50 \times 20}} = v$$

we find it to be approximately 49 ft. per second, and for the same machine with the second propeller

$$\sqrt{\frac{44.87 \times (3 \times 20)^2}{44.87 + 20}} = v$$

a velocity of approximately 50 ft. per second, thus showing that it is possible for a propeller having a lower thrust per h. p. than another when the machine to which it is attached is held stationary, to drive the machine faster through the air in flight, than the propeller having the higher thrust per h. p.

I wish to specially comment on the common error of using the wind pressure coefficient in propeller thrust calculations. I have only used it so far for the sake of simplicity in laying down comparative effects. Before closing this series of lessons I will give it differentiating values under varying conditions. As noted above, its value not only changes materially

(Continued on page 79)

AERONAUTIC CONSTRUCTION AIDS

IN the articles on construction which have appeared in "Aeronautics," the endeavor has been to show how other builders do things, to show new ideas in the necessary details of construction, and in this way to allow improvements to be thought from the ideas suggested by the work of others.

R. E. Pelterie has taken out a patent on the control of a horizontal rudder. (See Fig. 1.)

This mechanism has been designed to

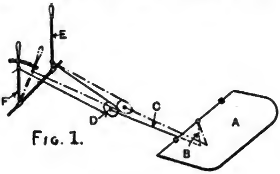


Fig. 1.

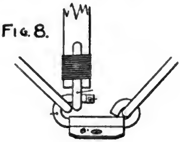
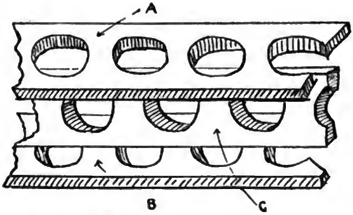


Fig. 8.



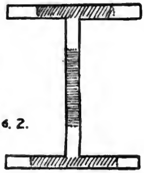


Fig. 2.

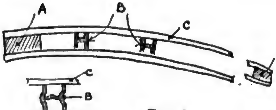


Fig. 3

Fig. 4

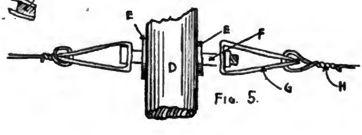


Fig. 5.

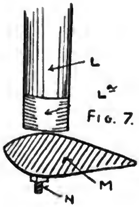


Fig. 7.

Fig. 9.

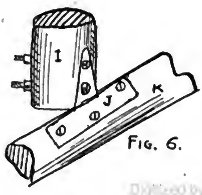


Fig. 6.

enable a large and rapid adjustment to be given to the "elevator," as it is called in England, and also to allow it to be set accurately. The lifting plane A is operated by means of the lever B, which is connected by a link C to the centre of a pulley D. An operating cord runs round this pulley and is connected at one end to the control lever E at or near the fulcrum thereof, and at the other end to the control lever F near the handle. By moving the lever F a large movement is imparted to the pulley D and lifter A. Thus the lifter can be moved through a wide range rapidly by means of the lever F. To set the lever accurately and to provide delicate control the lever E is used. Owing to the attachment of the operating cord near the fulcrum of this lever a large movement of the lever results in but small movement of the pulley and elevator. The patent specification describes also a system whereby levers are used in place of the cord and pulley illustrated.

In Fig. 2 is shown the main beam construction of the Beach-Willard monoplane. A and B are the horizontal and C the vertical parts. These are fastened together with glue and screws. Care must be taken with this form of building to prevent warping. The same system is used to separate the upper and lower half of the ribs, running at right angles thereto. (See Fig 3.) AA are two thin strips at front and rear of the main surface to which the ends of the ribs are fastened.

To tighten guy wires, F. H. Lindsay merely crimps the wires as much as may be necessary, (Fig. 4).

Dr. H. W. Walden uses the system of trussing shown in Fig. 5. D is the strut, EE are washers, F is a bolt, G is a piece of metal (thimble) bent as shown and H is the wire, run through the two ends of G. In Fig. 6 is shown a method of joining horizontal beams and vertical struts. I is the strut, J and ordinary "T" hinge and K the beam.

Fig. 7 shows another method. L is a strut, La a ferrule, M the beam and N a bolt, securely fastened inside the strut with glue and a hollow dowel through which the bolt goes.

The Wright's scheme of joining is shown in Fig. 8 and the curve of their surface is 9.

HISTORY OF TWO-SURFACE FLYERS

THE popular use of the two-surface machine has brought up the question of its origin. It will be of interest to refer to the article of Octave Chanute in the September and October (1908) issues of "Aeronautics" on the "Evolution of the 'Two-Surface' Flying Machine."

F. H. Wenham of England, in 1866 originated and patented a machine with superposed planes. Stringfellow showed a large triplane model in 1868. Others experimented with multiple superposed planes. Then Lawrence Hargrave used two surfaces only in his "box" kite, now so well known. In 1895 Lilienthal glided with a two-surface machine.

In 1896 when A. M. Herring was working for Mr. Chanute, the latter designed and built a triplane. The lower surface was later removed. Over 700 glides were made with this machine and this type of apparatus has since been universally known as the "Chanute," inasmuch as he was really the first to actually construct and extensively use a reliable apparatus of this design.

THE FIRST POWER FLIGHT.

Sir Hiram Maxim must be credited with the first flight ever made by a machine with a self-contained power plant. His "fearfully and wonderfully made" aeroplane flew for about 200 ft. on July 31, 1894. Then there is Ader, whose flight with a steam power monoplane of about 1,000 ft. on October 14, 1897, has been pretty well established as a fact.

The Wrights are undoubtedly the first men to have made a successful flight in a power machine (December 17, 1903.) Maxim, Ader, and Kress had also flown, but did not succeed in landing safely.

A. M. Herring claims two flights with compressed air power in 1898, but these were unwitnessed.

The Cuthbertson flying machine which was built at the yards of the Michigan Steel Boat Co., Detroit, was smashed the last time the inventor tried getting it into the air. The boat company is now building another one to be ready by the end of July.

G. Curtis Gillespie, 186 Prospect Park Ave., Brooklyn, N. Y., is building an aeroplane which will soon be completed. The delay is now with the engine. Many will remember the large-sized model and the full-sized machine shown by Mr. Gillespie at the first two shows of the Aero Club of America.

W. H. Holloway, 117 E. Hargett St., Raleigh, N. C., is in the market for a light motor.

IN THE WORLD OF AVIATION

AMERICA STEPPING FORWARD.

A. P. Warner Buys Curtiss Aeroplane.

ON Tuesday night, June 22nd, Mr. C. F. Wyckoff, of Wyckoff, Church & Partridge, New York, Eastern distributors for Stearns automobiles, arranged for the selling of Herring-Curtiss aeroplanes.

Within twenty-four hours Mr. C. Wm. Wurster, New York Manager for the Wyckoff Advertising Company, who takes care of the publicity and advertising for Wyckoff, Church & Partridge, sold one of the first practical aeroplanes ever purchased in this country by a private individual, to Mr. A. P. Warner, Vice President and General Manager of the Warner Instrument Company, of Beloit, Wis. Russell and Frederick Alger were, so far as known, the first individuals to purchase an aeroplane in America, buying a Wright machine.

For a number of years Mr. Warner has made a close study of aviation, and through "Aeronautics" has kept himself fully posted on the progress of the various American and foreign gasless machines.

Mr. Warner will probably soon enjoy the unique distinction of being the first private gentleman to have delivered an aeroplane which an amateur can readily handle in the air for an hour or more. The contract provides for delivery of the aeroplane within 50 days, and the assembling of the various parts will be begun at once.

Incidentally Mr. Warner is closely allied with the automobile industry through the manufacture of high grade speed indicators.

The problem of inventing an improved instrument which will register the speed of an aeroplane while in flight is just now of the greatest interest to Mr. Warner, and he proposes to begin experiments along this line just as soon as he has mastered the handling of the machine just purchased.

The machine is to be shipped to Beloit where Mr. Warner will begin trials. In the winter, the adjacent lake will provide a perfect place for learning.

Curtiss To Go Abroad.

Glenn H. Curtiss has definitely made entry to represent the Aero Club of America, in the Gordon-Bennett aviation contest to be held over the Betheny plain in the champagne country of France on August 28. Gordon-Bennett offers for the winner's club a $2,500 cup, and $5,000 in cash to the aviator himself. The contest is for speed, twice around a 10-kilometer course. Landings are permitted.

From August 22 to 29 a whole week will be devoted to aeronautics. There will be elimination trials for the Gordon-Bennett, speed and altitude contests, as well as balloon and dirigible events. In all $40,000 are offered in prizes, most of which sum is donated by champagne manufacturers.

Aeroplane In Washington State.

H. C. Richardson, Othello, Wash., is constructing an aeroplane, to be finished early in the Fall. A biplane, with the upper and lower surfaces forming dihedral angles and meeting at the extremities, the machine has a spread of 38 ft. over all. There is a movable tip at each extremity 2 by 8 ft., 3 ft. of which are flexible. Running back from the rear of the usual sustaining surfaces on each side of the backbone of the apparatus are two large surfaces at a dihedral angle, each 8 ft. wide by 26 ft. front to rear. The rear edges of all planes are flexible. The tail is two-surfaced, 3 by 8 ft., spaced 2 ft. apart, moving at every conceivable angle. Two levers control all movable parts.

Newman Aeroplane Makes More Glides.

More towed flights have been made by the Newman aeroplane, built by the Brownsville Aeroplane Co., Brownsville, Tex. A Curtiss motor was expected by July 1st and as soon as this is installed, power flights will be tried. If successful, the machine will compete for the World's $10,000 New York-Albany prize—at least, that is what the builders say.

W. H. Butler's Flying Machine Shed At Morris Park.

Plans have been filed with the Building Superintendent of the Bronx for a two-story "garage" for the sheltering of flying machines to be built for Wm. H. Butler at the south end of the Morris Park race track.

The affair is something brand new in the building line in this city. It is to be of wooden frame construction from designs by the Dixon Building Co., having rubberoid roof, the latter being practically fireproof and durable. It will have a frontage of 25 feet and a depth of 55½ feet, and is to cost $3,000.

Canadian Aeroplanes Ready.

Ottawa, July 10.—Trials of the new flyers of the Canadian Aerodrome Co., of Baddeck, will soon take place at the military encampment at Petawawa by Messrs. Baldwin and McCurdy.

Young America In Aviation.

At Hammondsport, N. Y., four young men, Messrs. Babcock, Locke, Gleason and Robinson, are making experiments in aviation. During the winter they made some great glides down hill on the snow and have since developed a more advanced apparatus about which they tell as follows:

"A monorail like a channel-section was laid on a gentle slope. The machine was taken to the grounds and a short flight was made at 5.30 p. m., but owing to motor trouble, it terminated in a broken skid.

"After repairs a trial was made another day before the surfaces were dry after a shower and consequently they were not airtight. The machine was carried (as it only weighed about 150 lbs.) to the starting point and placed on the monorail. Then the motor was tuned up until it ran perfectly by an expert motorcycle tester, Chas. Locke, who is a very active member of our club.

"When all was ready the operator's seat was taken by Wm. Babcock and the signal to let go was given. The machine was held on the sides by men until it gained headway. Then it balanced automatically owing to the dihedral tips. When a speed of about 18 miles per hour was reached, the operator raised the front control slightly and the machine rose from the rail. It flew very steadily for about 75 ft., but slowly lost speed on account of insufficient motive power and sank slowly to the ground on an even keel. A few small pieces of wood were broken upon landing. This machine was of our regular type with the box tail covered on top and bottom only. The motor was a single cylinder 3 h.p. motorcycle engine. The propeller was of laminated construction 3 ft. in diameter. It was directly connected and it revolved at 1000 r.p.m. The aeroplane was supported upon two motorcycle wheels in the center of the machine, one behind the other. The flight was considered a success in every way except for insufficient power. A double cylinder V-type engine is to be installed and more flights will be attempted."

An Aerial Railroad.

Paul H. Pages, Borough Park, L. I., is working on an overhead monorail transit line, somewhat similar to the famous electric aerial trolley line now running in Germany. There are some additions, however, which make the plan truly aeronautical.

Above the car itself are aero-surfaces of such area as to lift nearly the entire weight of the car or train from the overhead monorail. There is also a propeller to each car to assist in the lift and to hasten the acquiring of initial velocity. The cars are to be very light, and as there would necessarily be less friction and fewer moving parts, greater speed is promised.

It is proposed to install such a system between New York and Long Beach.

The Aeroplane-Safety-Suspension Electric Railway was incorporated last April. The treasurer of the company is the Rev. John C. Welwood, pastor of the Bensonhurst Episcopal Church. The full list of officers is as follows: Paul H. Pages, president; W. W. Heroy, first vice-president; George Giller, second vice-president; Stephen W. Dodge, third vice-president; James P. Kohler, secretary; John C. Welwood, treasurer; Edwin D. Kenyon, general counsel. The capital of the company is given as $100,000.

Aeroplanes for Meteorology.

Dr. Weichert, of the German University of Gottingen at Hanover, plans to send small aeroplanes to great heights for the purpose of obtaining meteorological data. These would be steered by means of electricity. Some success has already been had with a small apparatus. This recalls Prof. Cleveland Abbe's article along the same line, printed in the February, '09, issue of this journal.

R. D. Herzog, of Harvard, Nebr., writes: "I tested a new form of propeller last night. I was present at Hammondsport when the engine and propeller were tested on the 'Silver Dart,' and I used the same method of testing, which I presume to be fair and correct. We obtained an even pull of 16 lbs. using one man power. This propeller made 59 revolutions per minute at time of 16 lbs. pull. Do you not think this is good? I am confident that 20 horsepower will suffice to drive and fly my new aeroplane which is just being started, which, ready to fly, including engine and operator, will have to lift ⅞ lbs. per square foot. The planes of the aeroplane and propeller are the same design." (See April, '09, number for description of machine.)

And in spite of the fact that they have been wined and dined by Europe, the Wrights still remain the simple, unpretentious mechanics they were when they went away. The only thing that ever hurt their feelings got its sting from the fact that they are good mechanics. When M. Fordyce, representing the French government, looked them up in Dayton some years ago to buy the rights of their machine, he had to inquire of a prominent citizen where to find them.

"Don't pay any attention to those Wrights, Mister Fordyce," said the p. c. "I'll tell you the man you want to see. You look up Uncle Bill Hooley."

"And what has he done?" asked Fordyce.

"Why, haven't you heard?" asked the prominent citizen. "Why, dang it, he has discovered perpetual motion!"—N. Y. Globe.

WRIGHTS BEGIN TRIALS.

Dirigible No. 1 at Toledo.

On the same day that the Chief Signal Officer was presenting the Wright medals at Dayton, the machine itself arrived at Ft. Myer, Va., the Wrights following on the 20th to complete the assembling and adjusting in the aeroplane shed on the drill ground.

A delay of 30 days was granted by the Secretary of War in which to complete their official trials. This gives them until July 28.

Eight men of the Aeronautical Detachment are on duty at Mt. Myer in connection with the trials of the Wright aeroplane.

A Board of Officers consisting of Major George O. Squier, Signal Corps; Major C. McK. Saltzman, Signal Corps; Captain Charles S. Wallace, Signal Corps; Captain C. DeF. Chandler, Signal Corps; First Lieut. Frank P. Lahm, Signal Corps; First Lieut. Benjamin D. Foulois, Signal Corps; Second Lieut. Frederic E. Humphreys, Corps of Engineers, has been appointed by the Chief Signal Officer for the purpose of observing the trials of the Wright aeroplane at Ft. Myer, and to make a report and recommendations in regard thereto.

Lieut. George C. Sweet has been assigned from the Navy Department as an observer of these trials and is also made a member of this Board.

To erect the catapult, take apart and assemble a balky motor, complete the machine, so on and so forth, took until the 28th, when it was brought out for trial. At last all was ready but the wind, and that refused absolutely to abate, even though "Uncle Joe" Cannon and Chairman Tawny of the committee on appropriations, a large number of Senators, Representatives, officers and just plain misters, misses and mistresses of high degree fretted and fumed in the sweltering sun. The machine was new and untried and it was not deemed advisable to attempt a flight in the wind that was blowing, so all and each of those assembled disassembled themselves and traveled home.

Details of the flights which began June 29 will be found under "Some Observations on the Wright Trials," by Harold H. Brown, in this issue. At the time of going to press, July 10, no further flights have been made.

Dirigible No. 1 and Lieutenants Bamberger, Winter and Dickinson, with 12 men of the Aeronautical Detachment have been ordered from Fort Omaha, Nebraska, to Toledo, Ohio, for the Military Tournament during the week beginning July 5th.

Second Lieut. Frederic E. Humphreys, Corps of Engineers, was assigned to duty in the Aeronautical Division on June 11th.

Four additional men have been added to the Aeronautical Detachment, which now comprises 12 men with Dirigible No. 1, and eight men on duty at Ft. Myer, Virginia, in connection with the trials of the Wright aeroplane.

Memorial for Selfridge.

A monument at Ft. Myer over Lieut. Selfridge's grave is being erected by his father, the work being in direct charge of his representative Col. James M. Locke. The Aero Club of America's memorial, if erected, will probably be in the cemetery at West Point. Lieut. Lahm is chairman of the committee in charge.

Herring Asks for More Time.

A. M. Herring has asked for another extension of time. His last extension was up July 1st, but he has formally asked for a reopening of his case and an extension to August 15th. Up to going to press, no action had been taken by the Department on his request. His machine is said to be about completed and he is to use one of the new type Curtiss motors, his own motor being deemed unsuitable for severe work.

WASHINGTON, July 12.—In a slight and fitful breeze Orville Wright flew for 5 min. 38 sec. at a calculated speed of 43 miles an hour, the motor running very well.

NEXT MONTH.

In the succeeding issue there will be an interesting critical article on the Curtiss aeroplane, by Harold H. Brown, with full details and measurements.

The second installment on Patent Law, by F. O. Andreae, has unavoidably been postponed to the September issue.

AT MORRIS PARK

AEROPLANE FLIGHTS AT AERONAUTIC SOCIETY EXHIBITION.

Martin In Towed Flight Barely Escapes Serious Accident.

CURTISS CIRCLES TRACK.

Wind Wagon Makes Fast Mile.

THE Morris Park aerodrome looked like a full fledged flying machine foundry the last half of June. Any one who had a machine of any kind was getting it in shape for the June 26 show, though the efforts made did not get some of the machines finished after all.

On the 13th the Curtiss aeroplane, for which the society contracted, arrived. Several days were spent in assembling it, and on the 16th a straight flight was made in the gathering gloom. This was the first aeroplane to fly at Morris Park. After returning from a trip to Hammondsport, Mr. Curtiss made two short flights on the 19th, in one of which the speed was figured at 46.7 miles an hour. The rear horizontal rudder was set at an angle with the ground so as to cut down the speed by giving greater lift. On the 24th three more short flights were made, and a circle of the track.

In the storm of June 25th the Myer dirigible was blown against a post and put out of commission for the show.

JUNE 26TH EXHIBITION.

Those visitors who were willing to brave one of the hottest days on record found much of interest in the exhibition, the first of its kind ever held in the world. Not only were there present machines, models and kites approaching in number the recent foreign aero shows, but in addition, real flying, towed flights, balloon ascents, wind wagon demonstration, etc.

During the first part of the afternoon, when there was a slight breeze, Samuel F. Perkins had in the air his display of kites and banners, and over a hundred school boys, in charge of A. E. Horn and W. M. Mohr, contested with kites in various contests.

Dr. Wm. Greene had organized a "balloonatic" obstacle contest in which the competitors suspended themselves from small balloons and endeavored to run and leap over obstacles. The spectacle was a funny one, as more often the balloons pulled the competitors backward than they could pull the balloons forward.

On the lawn and in the sheds were the various machines and models of the members. Among these were the full-sized machines of Messrs. Beach-Willard, Dr. Wm. Greene, F. H. Lindsay, Geo. A. Lawrence, Fred Schneider, F. E. Rickman, Dr. H. W. Walden, and the remains of the Kimball machine; the Martin, Wittemann, Hendrickson and Kimball gliders. Among the flying models were those of R. E. Scott, Edward W. Smith and F. O. Andreae. The Scott model made many successful flights. Edward W. Smith, whose twin screw model has been described and illustrated previously in this magazine, won the first prize. The model shown herewith was launched from the hand and flew for 52 paces. The other model was launched from a little catapult and travelled 50 paces, with twin propellers. None of the gliding models were tried.

The Thomas wind-wagon had been completely rebuilt, and was very successful. Though really in an unfinished condition, it made a circuit of the mile track in 2.07. This is equipped with a 24 h. p. air-cooled Aerocar motor, driving by chain an 8-foot propeller. Prof. Pickering's man-power tricycle was also in evidence.

During the early afternoon Mr. Curtiss made two straight flights. Next Wm. H. Martin, of Canton, Ohio, was towed in his big glider by a six-cylinder Kissel Kar automobile. The glider is a monoplane with large surfaces underneath set at a dihedral angle. It is provided with rudders and a boat shaped frame runs on three wheels. The speed of the automobile was a little too great, the bridle gave way, and the apparatus made a short and successful swoop over the fence. The machine was partially wrecked, but Mr. Martin was not seriously hurt. The dihedral angle is Martin's scheme for preserving lateral stability, and in his flying model it works perfectly, righting itself, no matter how started. But the big machine swings from side to side and oscillates considerably. Wm. H. Aitken made another towed flight in a Wittemann glider, keeping on even keel and landing safely.

Two hot air balloons made ascents, with parachute trimmings. The aeronauts were Johnny Mack and Mary Hunter, the Stevens medal being awarded to Mr. Mack.

The Schneider machine was placed on the catapult and started, after long delay caused by a leaky radiator, but it did not fly. The engine is much too heavy, for one thing.

It was nearly eight o'clock before Mr. Curtiss was able to make another flight, and in this one he circled the lower end of the track, but hesitated about taking the second turn at the north end. Criticism has been made of the size of the Morris Park track, the largest in the country, on account of its being too confined, but those who have seen the Le Mans course, where Wright started flying in France, say that Morris Park is considerably larger.

The attendance was very small, and the society faced a deficit running nearly into $5,000. Nearly every one seemed well satisfied, however, with the events of the day.

EXHIBITION JULY 5TH.

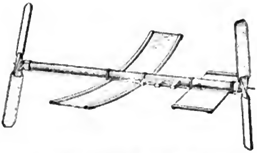
At the urgent appeal of several of the members of the Aeronautic Society, a second exhibition was held on July 5th, which exhibition is now a thorn in the flesh of the Enthusiastic Ones. A larger crowd was in attendance, but lack of organization and co-operation, combined with the absence of promised events, disappointed a majority of the spectators. It was after dark before the strong and steady wind subsided enough to allow Mr. Curtiss to make two short straight flights, and a near-circle of the track. Those who remained felt repaid for their wait, but the general public, which does not appreciate the whys, wherefores and whims of aeronautics, grew annoyed, to say the least, when there were delays.

The first part of the afternoon was taken up by three long distance motor-cycle events and the wind-wagon demonstration. Wm. H. Aitken had erected in the infield opposite the grand stand a real perilous-looking platform 30 ft. high from which he promised to glide at intervals during the afternoon. The wind, however, blew from the opposite side to that on which he had his inclined runway, and Aitken with his glider posed on the top of the tower the whole afternoon, amid the jeers of the crowd.

Dr. Wm. Greene took out the repaired dirigible and made a short flight. His weight proved too great for the miniature airship and it slowly sank to the ground. The hot air balloon ascents and parachute drops, which were a novelty in New York, were one of the missing numbers on the program.

Later even than the Curtiss flights, Geo. Thompson made several excellent and stable towed flights in the Martin glider, and R. E. Scott made a successful towed flight in a glider of his own design.

One of the jokes of the first show was the Beach-Willard monoplane, which was found too big to be gotten out of its shed. At the second exhibition the machine was wheeled out all right, but in the Beach-Willard hustle-bustle way of doing things, the engine was found to run the wrong way for the propellers. That prevented its first trial.

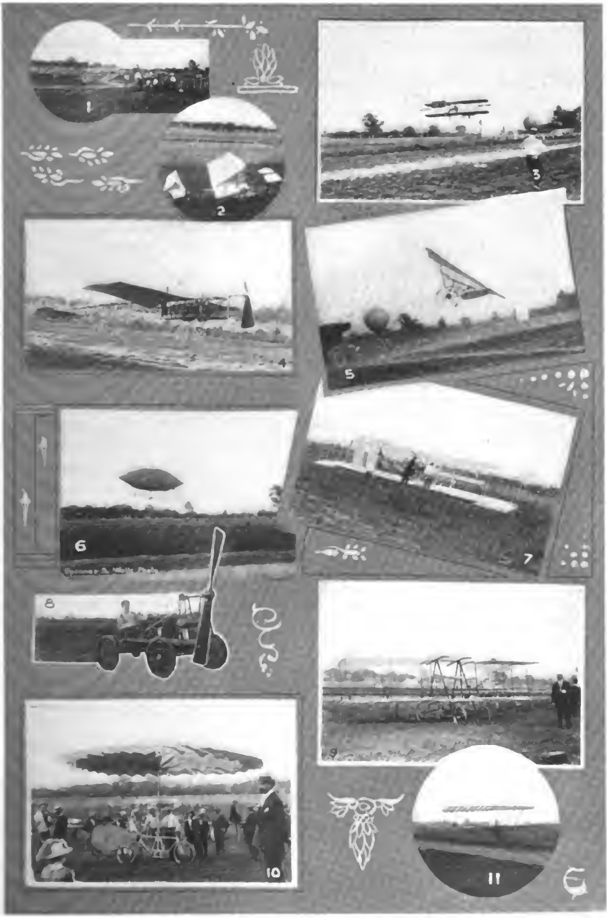


One of Edw. W. Smith's Models.

Entry had been made by Mr. Curtiss for the Bishop $250-kilometer-prize, and it was announced that he would endeavor to establish a record in competition for the "Scientific American" trophy, but neither competition was held. Mr. Curtiss has taken his aeroplane to the Hempstead plains on Long Island for some demonstrations with the permission of the Aeronautic Society. After these are completed, the machine will be returned to Morris Park. While on Long Island Mr. Curtiss will teach two members of the Aeronautic Society how to operate it—that is, if the machine withstands the first lesson.

Kimball Aeroplane Wrecked.

After many days of consecutive trials at Morris Park, the first part of June, the Kimball eight-propellered aeroplane met with a serious accident which will delay further experiments for several weeks. At the later trials, while the novel type of transmission employed continued to give satisfactory results, some trouble developed in the ignition, preventing the engine exerting full power. In spite of this, however, sufficient speed was attained to lift the front and one side of the machine well into the air, and the remaining wheel in contact with the ground seemed to barely rest on the high points as it rolled along at about thirty miles per hour. Upon such an occasion, while intent upon operating the steering



1. Hendrickson Glider. 2. Martin Glider. 3. Glenn H. Curtiss making a straight flight. 4. The Beach-Willard Aeroplane sunning itself. 5. Wm. H. Martin and his glider in a towed flight. An instant after this photograph was taken the glider scaled the fence on the outside of the track. 6. Dr. Wm. Greene making an ascent with the Myers Dirigible. 7. Rear view of the Shneider Biplane. 8. Charles M. Crout driving the Thomas Windwagon. 9. Lindsay's Aeroplane minus the motor. 10. The Rickman Helicopter. 11. Wm. H. Aitken at the start of a towed flight with a Wittemann Glider.

gear, one wing of the machine swung over an earth embankment at one side of the track, switched the apparatus sharply to one side, and before the speed could be slackened crashed into the earth, breaking some of the propellers and wrenching the frame. The work of repairing has been begun, and the opportunity availed of to make a number of minor changes in the control and operation, chief of which will be the changing of the vertical rudders from the ends to the rear center, and reducing the spread of the machine over all by about six feet.

Shneider Biplane a Wreck.

New York, July 13.—Last evening Fred'k Shneider made another trial with his aeroplane at Morris Park; in a few brief seconds it was a bunch of junk.

The machine was placed on the starting rail, the engine started, the weight dropped and off he went. His forward rudder was tilted up too sharply and a wind blowing head-on took the machine up at a steep angle for about 30 ft., then it lost all headway and started down backwards, in a manner similar to the Kimball glider accident (see April, '09, issue), striking the ground with the rear edge of the lower surface, breaking the propellers and smashing everything but the motor to kindling. While in the air the machine buckled in the middle, and each wing tilted up at an angle, showing lateral weakness. The motor was uninjured.

Andreae Model.

A curious-looking model has been developed by F. O. Andreae, of Central Valley, N. Y., and shown at the June 26th exhibition of the Aeronautic Society.

For a trial flight it was hoisted 300 ft. into the air by Eddy kites on a piano wire 2,000 ft. long, of which 1,200 were out when the model was released by means of a hook and ring. A small and old steam engine was used, horse power unknown. The engine worked badly but the propellor seemed to do better than ever before, and the apparatus reached the ground without injury. The flight lasted some minutes, exact time not taken. This model, called "A-1," measures 10 by 10 ft., and weighs with the engine 35 lbs.

The model was not expected to do as well as it did, and Mr. Andreae started immediately to build a new one, acting on the lessons learned by this flight.

F. O. Andreae after he got his model machine into the air said: "I believe the properly constructed machine, to be yet invented, will keep a steady safe balance without special devices, will not need extensive means of control and be a machine distinguished by the absence of upright struts and diagonal bracing wires. Machines are only hard to control because they are very imperfect attempts as yet. I am encouraged by the results attained, that's all. I hope to evolve something better."

The Andreae Model in Flight.

AERO CALENDAR

July 10.—Aero Exposition at Frankfort Germany, till October 10.

July 28.—Wright Brothers must complete contract at Washington.

Aug. 1.—Landing Balloon Contest, Aeronautique Club of France.

Aug. 3-7.—Balloon ascents at Milwaukee Home Week Celebration.

Aug. 15.—Herring must complete trials at Washington.

Aug. .—Exhibition Pacific Aero Club, San Francisco.

Aug. 22-29.—Aviation Week at Rheims.

Aug. 23.—Gordon-Bennett Aviation Contest.

Sept. 4-19.—Austrian Aero and Industrial Exhibition at Linz.

Sept. 5.—Aero events at Motor Parkway. Indianapolis.

Sept. 5-11.—Daily Balloon Ascents during North Adams' Old Home Week.

Sept. 25-Oct. 9.—Hudson-Fulton Celebration, New York.

Sept. 30-Oct. 8.—Motor Exhibition of Aeronautic Engines at Paris.

October.—Aero Carnival in Pittsburgh.

Oct. 3.—Gordon-Bennett Balloon Race at Zurich, Switzerland, twenty balloons entered.

Oct. 4—Aero Club of St. Louis Balloon, Dirigible and Aeroplane Events.

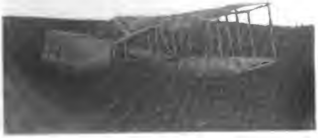
1910.—Aero Show in Boston.

GLIDING FROM HOT AIR BALLOON

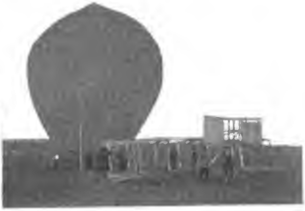
THE experiments conducted some years ago by Prof. J. J. Montgomery, of Santa Clara College, in which glides were made from considerable heights after the operator and machine had been taken up by a hot-air balloon, have been copied by U. Sorenson, of Berwyn, Nebr.

Describing the machine and his experiences in the air to a representative of 'Aeronautics," Mr. Sorenson says: "The aeroplane was double-decked, main planes 6 ft. x 30 ft., spaced 5 ft. 4 in., with rudder extending 10 ft. in rear. It was equipped with warping planes for balancing.

"The balloon was an ordinary hot air balloon, and was well inflated, and when cut loose raised swiftly to a height of 3,500 ft., carrying the glider edgewise, the hitch being made in front of the glider about 18 in. above the lower plane. In leaving, the box rudder hit the ground and was broken. This I did not notice, or I should have stayed with the balloon.



Glider After the Accident. The Broken Planes on Left Caused the Spinning During Descent



The Hot Air Balloon and Glider Just Before the Start

"Before cutting loose I hooked the rudder lever so as to right the glider as soon as it commenced dropping, but as the rudder was broken, it failed to right until it had dropped 500 feet or over, and then the sudden stop in the air broke the planes on the left about 4 ft. 6 in. from the end. The descent was made in about one minute. This caused it to up-end, and gave a spinning motion which was about 100 r. p. m. This gave me a chance to warp the plane on the right and balance the machine again. It was completely demolished when it hit the ground, about a half mile from the start. I think the only thing that saved my life was my experience with the parachute.

I thank "Aeronautics" for the good I have learned through its pages, and hope this experiment will help some one else along in this great field."

STRIVING FOR PERFECT MACHINE

Arthur Holly Compton, of Wooster, Ohio, has evolved a system of equilibrium for which he claims great things. In the new Farman machine, described in the June issue, auxiliary surfaces are hinged to the rear of the supporting planes for obtaining lateral stability. The Wright Brothers warp the wing tips. These operations are in addition to the moving of the horizontal rudder.

In the Compton model are combined the apparatus for securing lateral and fore-and-aft stability, and he has reduced the number of moving parts to two. At some distance in front of the main surfaces, one at either end of the wings, he has placed horizontal rudders which are large enough to maintain stability in any wind. In preserving fore and aft stability the rudders are moved simultaneously in the same direction; in keeping the lateral balance one rudder is turned up and the other down. This can be managed by a steering gear which is so simple and natural in its movements that no mistake could be made. He has secured fore-and-aft stability by placing the center of gravity a little in front of the center of air pressure and turning the rudder slightly upward, but has found that in gusty air the wings set at a dihedral angle are not as stable as when they are perfectly straight, and he believes that when there is an operator in the machine, it would be better to have the wings turned slightly downward.

By Arthur Holly Compton.

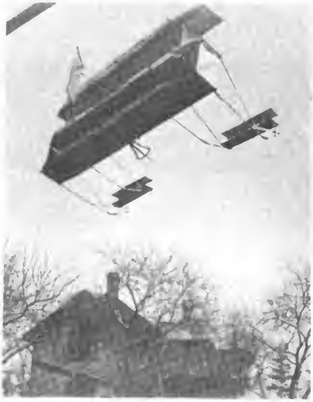
This method of securing stability has proved very efficient, and is more economical than any other type. Economy depends upon the amount of power required to drive the machine a given distance, and the power required depends upon the ratio of the lift of the machine to its forward resistance. Following the planes are detrimental as they lessen the lift of the wind, for the planes in front impart a downward motion to the air on which the following planes must support themselves. It is this which makes the large tail of the Voisin machine such a drag. The Wright aerocurve has much less following surface than this type, and our machine has the same proportion of surface in the horizontal rudders as the Wright machine, thus losing no more lift than theirs and much less than Voisin's. Using two rudders for securing equilibrium also lessens the horizontal resistance when turning in a sharp curve.

Take the Wright machine for an example. When this is about to make a sharp turn, the wings are warped, one end turned up and the other down, and the horizontal rudder is turned upward. As an end of the machine is turned down and the rudder up, these two surfaces counteract each other in lifting force, while at the same time they increase the forward resistance. This is also the case in the Voisin machine. With our method, however, when it is desired to change both the lateral and fore-and-aft angle, the two rudders counteract each other only enough to change the lateral balance. Thus we see that not only is the lift of the surfaces greater with this new system of balancing, but, also, that it produces less forward resistance than any other type, making the ratio of lift to forward resistance, upon which depends the economy of the machine, somewhat greater.

One important step which has been taken in the construction of our model is the use of three instead of two superposed planes.

There are several reasons why we consider this construction advantageous, the most important of which is the compactness of this style compared to that of the double surface type, making it more convenient for housing. A triple-decker has slightly less forward resistance for the same amount of surface, weight and strength, and in experimenting with different models the triple-surfaced machine seemed to be more stable on windy days than a double-surfaced model of the same size. Another advantage of using three curves is that in shortening the lateral dimension of the machine, the radius of the circle in which it can turn is also shortened. Also when the Wright machine alights, the propeller and the vertical rudder are in danger of striking the ground, but if they use a tricurve its large vertical dimension would give plenty of room for them and avoid all risk of injury. Having considered all these points it has seemed advisable to us to adopt the triple-surfaced machine.

These two improvements, the use of three superposed surfaces and the new method of securing stability, have been embodied in the model shown in the accompanying photograph. This model is 39 inches long with the surfaces 6 inches wide and the same distance apart, curved in a parabola through an angle of nine degrees. We have tried several Wright models and one of the Voisin type, but even with the double surface the new system of balancing seemed steadier than the others. In order to secure automatic equilibrium in gusts it was found necessary to use vertical planes between the supporting surfaces of our model. We do not however advise this in a machine where a person can control the balance, for a side gust carries such a machine out of its course, and if compelled to fly in a narrow course this would be inconvenient to say the least.



Compton Model In Flight

Besides these two devices which have been tried and found to work well, we have thought of an improvement which ought to do away with one of the great defects of existing flying-machines, that of their inability to alight and start from any kind of ground. Machines equipped with wheels can start from almost any smooth meadow,

(Continued on page 90)

CLUB NEWS

The **Aero Club of America** has appointed the following as its representatives to the F. A. I. congress in Milan this Fall: Col. John Jacob Astor, Cortlandt Field Bishop, Jefferson De Mont Thompson, Colgate Hoyt, Orville Wright, Alan R. Hawley, Robert Lee Morrell and Dave Hennen Morris.

The **Aero Cub of Dayton** has had two ascents under its auspices during June with Captain Bumbaugh's "Hoosier," as noted in the list of ascensions. Other trips are planned an da balloon will be purchased.

The **Aero Club of California** has elected the following officers: Pres., H. La V. Twining; First Vice pres., A. L. Smith; Second Vice Pres., J. H. Klassen; Sec., Parke Hyde; Treas., E. W. Murch; Directors, J. S. Zerbe and H. J. Parker. A new constitution was adopted, dividing the membership into the following classes: active members $10 a year; associate, $5; life, $200.

The **Pacific Aero Club** has definitely decided to hold its show about the third week in August at Dreamland Rink. The Junior Aero Club has asked for space to exhibit its members' models, gliders, etc.

The **Aero Club of New England** is anxious to encourage ballooning and has inaugurated a very good plan. Chas. J. Glidden will devote his time to instruction in piloting and a special rate of $50 per ascension has been fixed for members intending to qualify as pilots. Payment for the necessary number of ascensions, ten, must be made in advance. The number of ascensions already made by the applicant will be deducted at the same rate. The balloon "Boston" will be used at Fitchburg and for the night ascension, the "Mass." at Pittsfield. The club has now 100 members and it feels that to close the season without increasing its number of pilots would indicate a lack of interest.

The club has offered the use of their 56,000 cubic ft. balloon Massachusetts to pilots of the Aero Club of America at $35 for each ascension and their balloon Boston for $25. The "Massachusetts" is at Pittsfield and the "Boston" at Fitchburg. The Boston is a 35,000 ft. balloon. The Massachusetts costs $50.40 to fill with gas, and the Boston $31.50.

With the **Aeronautic Club of Chicago,** things are going along very nicely. The club will have a big balloon race there in August, and expect to have one home-made aeroplane that will fly at the time of the meet. The membership of the club is increasing very rapidly. The Illinois National Guard is going to have an encampment at Elgin, and C. A. Coey's big balloon "Chicago" is going to be held captive there. After the maneuvers of the officers have been engaged in, Mr. Coey will have the honor of taking Governor Deneen and General Young for a little ride.

M. B. Sellers in the "Step Glider" Described in the June '09 Issue. On the Left is the Towing Tower

FUTURE AERONAUTICAL EVENTS

AERO TOURNAMENT FOR ST. LOUIS.

Aero Club There Plans Big Events.

On the occasion of the Centennial Celebration of the City of St. Louis, commencing October 4, three afternoons have been set aside for the balloon events. On the 4th a long distance race will be held; on the 8th and 9th aeroplane and dirigible competitions will be held. There will also be an "auto-aero" competition for members of the St. Louis club, who will follow in automobiles a balloon to be sent up. The first car to reach its landing place will be the winner. For all these and other events a large sum of money has already been raised.

SPHERICAL BALLOONS.

In the long distance race Monday, October 4, from Club Grounds, beginning at 4.00 p. m., there are offered the following prizes:

First, $600 or cup; second, $400 or cup; third, $300 or cup; fourth, $200 or cup; fifth, 100 or cup. The endurance prize will be a cup.

Contestants will be furnished gas free. The rules of the F. A. I. are to govern, and only licensed pilots are eligible. The entrance fee is $25, which will be returned upon starting.

AEROPLANES.

The aeroplane contests are to be held somewhere in the west end of St. Louis on Friday, October 8, at 2.00 p. m. The first prize, $1,000 and gold medal; second prize, $500 and silver medal.

The grounds will be laid out with a starting square approximating 200 feet; then a get-away will be laid out a half mile from the starting point. Each aeroplane will be given three trials for a get-away and if the aeroplane does not pass the outer square in any of these three trials, it is disqualified for the race. If the aeroplane passes the get-away line on the first trial, it must continue its flight, as it will have no more trials. The aeroplanes are to maneuver throughout a given district, for instance, Forest Park, if the Catlin track is chosen for the starting point. The 'plane staying out the longest and returning to the 200-foot starting square wins the first prize; to win a prize, it must fulfill the following conditions:

Leave the starting point and in at least three trials get outside of the outer get-away line; maintain a continuous flight and return to the starting square. The first prize will be awarded to the aeroplane remaining the longest in continuous flight.

ADVERTISING BALLOON RACE.

The start of the Advertising Balloon Race will take place at 2:00 p. m. from the Aero Club Grounds, on Saturday, October 9th.

DIRIGIBLES.

The race between dirigibles will be held from the Club Grounds, Saturday, October 9th, beginning at 3:00 p. m.

First prize, $1,000 and Gold Medal; second prize, $500 and Silver Medal.

The conditions of the race are that the dirigibles must leave the starting point and cover a triangular course as follows: Aero Club Grounds to Blair Monument, then to Mounted Police Station, returning to starting point. Each competitor is to have three trials and the best time out of the three trials is to count. No competitor can win two prizes as only one time is to be counted out of the three trials.

A special prize will be given for the best exhibition of maneuvering.

Aeroplanes and Dirigibles for Indianapolis

The new Indianapolis motor speedway will be the scene of a big event on Labor Day, Monday, September 5. Arrangements are being completed for a second big aeronautic event. On this occasion the contests are promised with aeroplanes and dirigible balloons. They are expected to form the biggest attraction ever booked for Indianapolis, and will be under the auspices of the Indiana Aero Club. The program for the Indianapolis meeting will be practically the same as that of the St. Louis Aero Club, of St. Louis, set for October.

The Indiana and St. Louis clubs will exchange courtesies. The Indiana club has agreed to send as many entries to the St. Louis meet as the St. Louis club sends to Indianapolis.

Aero Division for Hudson-Fulton Celebration

Hon. James M. Beck, former Assistant Attorney General of the United States, and at present Chairman of the Committee on Aeronautics of the Hudson-Fulton Celebration Commission, has left for Europe. During his sojourn abroad it is his intention to get in touch with the leading aviators in France, England and elsewhere, with a view of securing their co-operation in the proposed special features being inaugurated by the Aeronautic Department of the Hudson-Fulton Celebration Commission.

The Hudson-Fulton Commission recently appropriated the sum of $25,000 to carry out the plans which have been formulated by the Aeronautic Committee. One of the most important features promised are a series of spectacular flights and evolutions by aeroplanes at the time of the holding of the remarkable marine pageant which is to pass up the Hudson River headed by the replicas of Hendrik Hudson's "Half Moon" and Robert Fulton's first steamboat. It is proposed to erect a large landing stage in the vicinity of Grant's Tomb and to arrange similar facilities on the Palisades on the opposite side of the Hudson and from these landing stages the aeroplanes will pass to and fro across the Hudson, over the marine pageant as it ascends the River. The Aeronautic Department has already received most encouraging word from prominent aviators in this country and Europe, and as the Chairman has it is expected that negotiations will be closed with a number of the leading aviators before he returns to this country. The Committee expects to render assistance to the foreign aviators who enter the Hudson-Fulton contests in enabling them to bring their machines to this country, and they will also give a substantial sum of money to each contestant actually making the flight. And in addition to this a large sum of money and a handsome trophy, to be known as the Hudson-Fulton Trophy, will be awarded to the aviator who makes the most spectacular and satisfactory performance.

The Committee desire to secure entries from various aviators of America and recommend that parties who are building machines or at present experimenting with machines should get in touch with the Secretary of the Committee, William J. Hammer, who will be glad to give the fullest information regarding the plans of the Committee. Mr. Hammer is a well-known consulting electrical engineer of New York City, who has given a large amount of attention to the subject of aeronautics, is a member of the Aero Club of America and Chairman of the Hudson-Fulton Committee of that organization, a member of the Aeronautic Society and also a member of the Hudson-Fulton Committee of that body. He was also the Chairman of the International Aeronautical Congress of the Jamestown Exposition and has attended aeronautical congresses in this country and abroad. His address is Room 902, Tribune Building, Aeronautical Department of the Hudson-Fulton Celebration Commission.

The Aeronautic Society of New York City, which controls the Morris Park race track, wrote the Aeronautic Committee of the Hudson-Fulton Celebration Commission some time ago offering the full use of its grounds at Morris Park for such preliminary tests and experiments as the Committee might care to carry out. And it is the intention of the Hudson-Fulton Committee not to permit the entry of any aviator who has not previously qualified either by well-recorded flights or by an actual performance such as making a complete circuit of the race track at Morris Park; or, in other words, a flight of one mile with turns.

Arrangements are being consummated for holding a series of evolutions of dirigible balloons coincident. It is hoped to secure a number of the most representative aeronauts in this country, and possibly one or more from abroad, who will also pass to and fro across the Hudson forming difficult and spectacular evolutions and possibly accompanying the marine pageant a short distance up the Hudson. Plans are also being formulated for sending up huge man-carrying war kites.

The Hudson-Fulton Committee on Aeronautics hope at an early day to make further announcement of additional plans covering the aeronautic features of the Hudson-Fulton Celebration.

An interesting feature which is being arranged by the Committee on Aeronautics working in conjunction with Mr. Stoddard, Captain of Pagaentry, and which it is expected will be an important feature of the Historical Parade, will be a float typifying the inception and development of aerial navigation. It is expected that on this float will be shown a model of Professor Langley's "aerodrome." There will also be the original machine with which the Wright Brothers made their first flight, a man-carrying machine with self-contained power; and a model of the Stringfellow machine now in the possession of the Smithsonian Institution, etc.

During Mr. Hammer's recent visit to Washington he saw the authorities at Smithsonian Institution and also Messrs. Wilbur and Orville Wright. And since the return of Secretary Wolcott from abroad he has arranged with the Smithsonian Institution for the exhibiting of models of these famous machines.

It is expected that various other interesting models of notable spherical and dirigible balloons, aeroplanes, etc., will be included in the plan for the proposed float. It may also be decided to equip a second float.

Aero Show for Boston.

The first National Exhibition of Aerial Craft ever held in America is contemplated for Boston next spring. It has been customary to hold aerial displays in connection with automobile shows in New York and elsewhere, but the affairs have been incidental rather than of primary importance.

Owing to the great strides that aerial navigation has taken lately, this exhibition will be exclusively of the air machines, and so much interest has been manifested upon the part of those concerned in the project that it seems a foregone conclusion that success is assured.

The proposed show for Boston will include exhibits of all known types of air craft, heavier than air machines, dirigibles and balloons. Chester I. Campbell, of Auto Show fame, will have charge of the exposition, and Charles J. Glidden will be one of the prime movers in the project and has accepted the position of Chairman of the Executive Committee and of the Advisory Board.

The following gentlemen have already accepted and will serve on the Advisory Board, and their names speak eloquently of the interest being taken in the affair: Chas. J. Glidden, Chairman; Prof. W. H. Pickering, of Harvard College; Prof. David Todd, of Amherst College; H. Helm Clayton, Lewis R. Speare, Hon. Geo. A. Hibbard, Hon. Geo. H. Brown, Hon. H. O. Carpenter of Rutland, Vt.; Hon. W. H. Gannett, of Augusta, Me.; Prof. A. Lawrence Rotch, of Blue Hill Observatory; Mr. E. A. Tarte and Mr. U. H. Dandurand, of Montreal, Can.; Glenn H. Curtiss, of Hammondsport, N. Y.; Luke J. Minahan, Pittsfield., Mass., R. Lincoln Lippitt, Providence, R. I.; Herbert I. Wallace, Fitchburg; John Coughlin, Worcester, Mass. Messrs. Orville and Wilbur Wright and A. Leo Stevens have also been invited to serve on this board, and it is confidently expected that they will accept.

WILLIAMS HELICOPTER SUCCESS

WE have received from our Washington correspondent some interesting particulars of the important helicopter trials made recently by Messrs. Berliner and Williams at the laboratory and farm of Emile Berliner of Washington, D. C.

Mr. Berliner, whose fame is international as the successful electrical engineer and inventor of the telephone transmitter, the gramophone, the Victor talking machine, etc., has made a study of practical aeronautics for years, and has made some interesting experiments, particularly with the helicopter type of flying machine. Last year he had the Adams-Farwell people build him two light-weight aeronautical motors, of their revolving-cylinder type, of about 35 rated h. p. each, and with one of them connected to a single two-bladed propeller of 17 ft. diameter, and 40 ft. superficial aera, got a thrust of about 350 pounds.

J. Newton Williams of Derby, Conn., inventor of the Williams typewriter, the automatic bank punch, etc., has been a student of aeronautics for many years, and his experimental work was being carried on quietly before the Wright Brothers were known to the public. He has always worked, however, on the more difficult problem of developing the helicopter type. While awaiting the evolution of the light-weight motor, he built practical working models that would lift themselves to the ceiling, fly horizontally in a straight line, could be set to fly in a curve to the right or to the left, would lift and carry an added weight as great as its own weight, fully demonstrating or indicating its dirigibility and easy control, and the possibilities of a large machine.

Between two and three years ago, Mr. Williams built at Ansonia, Conn., a machine of man-carrying size and after trying a motor that proved quite inefficient in power, the machine was connected to the factory power, by belts and flexible shafting to test its propeller efficiency, and gave a thrust of over 550 pounds.

The machine was later taken to Hammondsport, N. Y., and an 8-cylinder Curtiss motor installed. Trials were made giving encouraging results, but the motor was not quite strong enough to lift the additional weight of Mr. Williams.

Last winter Messrs. Berliner and Williams discovered, on comparing notes, that unknown to each other, their work had been along quite similar lines, and that some of their experiments had been almost identical, in size and shape of propeller, methods of transmission, etc. Mr. Berliner having the two light motors which had been overhauled and improved and tested at his laboratory, and Mr. Williams' machine being completed and of lighter construction, it was arranged to conduct some further experiments together.

A number of instructive experiments and tests were made, each of the motors lifting the machine with a few pounds of added weight, and developing about the same thrust they did in Mr. Berliner's previous tests with a single propeller of some larger diameter and area.

The last and most important trials took place on June 26 at Mr. Berliner's farm, when, with the two revolving motors mounted upon the helicopter, each geared direct to the oppositely revolving propeller shafts, and with Mr. Williams standing on the platform, it lifted him three separate times. The trial was abruptly terminated by an accident to Mr. Moore, Superintendent of Mr. Berliner's laboratory who was running the motors, receiving an ugly looking but not dangerous cut in the upper arm.

In this trial, the two motors, with their bed plates, counter shafts and pinions, weighed 124 lbs. each—total, 248 lbs., making the total weight of helicopter, with the two motors, 460 lbs.; and with Mr. Williams' weight added, the total lifted was 610 lbs.

As this helicopter was originally designed for a motor of about 100 lbs., weight, these two motors loaded it to the danger point, taxing the light and frail structure quite to the limit, it was not deemed safe to make further trials. Mr. Berliner will immediately commence the construction of a motor some 50% stronger than one of these and only 25% more weight, and Mr. Williams will build a new machine some larger and some lighter, which, with his experience and knowledge of the progressive art of light construction, he can now do. The new machine with motor will not weigh over 325 lbs.

In this last trial, an extension was added to the propellor blades, increasing their superficial area to 80 ft., and the diam. to 18 ft. 8 in., which increased the general efficiency of the machine, the larger area giving greater lift per horse power.

Mr. Berliner is now on an extended trip in Europe, and Mr. Williams' experiments with him have terminated for the present.

The readers of "Aeronautics" are doubtless aware that the "Williams Helicopter" is of the type which has two superposed two-bladed propellers, on concentric shafts, revolving in opposite directions, driven by a motor resting on a platform that is suspended and supported by the shafts beneath the propeller. Its low center of gravity assuring automatic stability and perfect balance, it cannot be capsized, the operator having only to regulate the motor and steer the machine. As the method of steering and control are the subject of pending patents, they are not described. The machine carries a large folded parachute for emergency to retard its falling in case of stopping of motor, or other accident.

AERONAUTISM IN AMERICA

POINT TO POINT BALLOON RACE.

The Pittsfield Defeats North Adams No. 1 in Twenty-Mile Contest.

Chester, Mass., July 5.—In a twenty-mile point-to-point balloon race from Pittsfield over the Berkshire Mountains to this town to-day, the balloon Pittsfield, piloted by William Van Sleet, defeated the North Adams No. 1, with N. H. Arnold as pilot, by about five miles, the former landing close to the town line here, while the latter came down in Southampton.

The two balloons left Pittsfield about 11.30 a. m., with a strong northwest breeze blowing. At noon both were over the mountains, and at 12.20 p. m. the Pittsfield came down close to the Chester line. The North Adams No. 1 landed ten minutes later in Southampton.

Those in the North Adams, besides the pilot, were Carl A. Grout and E. L. Snyder, of Pittsfield, while with Mr. Van Sleet in the Pittsfield were Miss Mildred Hill and Daniel Cullen, also of Pittsfield.

Pommern Nearly Destroyed.

The balloon Pommern, winner of the 1907 Gordon-Bennett, and holder of the American distance record, was to have served as a captive balloon at Coney Island this summer. Dr. Julian P. Thomas, its owner, had fitted up at great expense a monster hydrogen plant, an elaborate windlass, and was about to make the first ascent when, on June 25, a sudden gale, which did untold damage all around the vicinity, tore the balloon from its moorings before any attempt could be made to secure or deflate it.

Later part of the envelope was recovered, when it was found that for 18 ft. up from the appendix the cloth was burnt. The reason assigned for this was that on its touching the ground a discharge of static electricity took place which set part of it afire. The netting was entirely lost. The unburnt cloth is marked all over with dark lines where the net had been, just as though a net had been painted on. Dr. Thomas is trying to rebuild it and carry out his plan.

Fourth Gordon-Bennett Balloon Race.

James Gordon-Bennett has come to the front for this year's race with another $2,500 prize to the winner. For the first three contests he provided in advance a $2,500 cup and three cash prizes of $2,500 each. This was to end his own giving, but he has changed his mind—our balloonists' thanks.

On Oct. 3 the fourth contest for the Bennett trophy will be started from Zurich, Switzerland. The gas works at Schlieren, on the outskirts of Zurich, will be in a position to supply 44,000 cubic meters of gas in two to three hours, under high pressure. The gas pipes leading to the grounds are a kilometer long and have been furnished free by a large iron works. The Zurich Corporation also supplies free all the gas for the big race and the various matches preceding it, beginning Sept. 30th

The first Gordon-Bennett race was from Paris in 1906, won by Lieut. Frank P. Lahm, representing America. The second from St. Louis the following year, was won by Oscar Erbsloh, who covered the greatest distance ever made in America. The 1908 race was won by Lieut. Schaeck on behalf of Switzerland, from Berlin. In this race he broke the world's duration record heretofore held by Drs. Kurt and Alfred Wegener, making a trip of 73 hours. The Wegener trip was of 72 hours.

Baldwin at Norwich.

Norwich, Conn., July 7.—Capt. T. S. Baldwin to-night concluded his ascents at the 250th anniversary of Norwich, making a long trip over the city. Yesterday he made two good flights and one the day before in a stiff breeze. The new Curtiss motor, similar in design to the one now in the Curtiss aeroplane, gives much more power and reliability than its predecessor.

Aero Club at Buffalo.

An aero club is being formed in Buffalo by E. M. Statler, proprietor of the Statler Hotel. A balloon will be bought for the use of members. Mr. Statler is enthusiastic over his recent trip with Leo Stevens.

Airship Crosses the Hudson.

Frank B. Goodale, a youthful aeronaut of Toledo, who is filling an engagement as chief attraction at the Palisades Amusement Park, New Jersey, near the Fort Lee Ferry, on June 11th made a spectacular flight across the Hudson River to Grant's Tomb, afterward landing in the river.

His performance surpassed anything of the kind ever witnessed in New York, except the dirigible balloon flights of Roy Knabenshue in August, 1905, when he made a voyage lengthwise of Manhattan Island.

Goodale's airship is only 58 ft. long, has a gas capacity of about 8,000 cu. ft. and is equipped with a seven horse-power motor. Its ascensional power is barely enough to sustain the boy during a short flight.

In the nearly calm air it was easy for him to guide the craft, so he circled about over the United States cruiser New York, anchored in midstream, and lowered to the decks a message, which he had attached to a cord.

Sailors on the warships caught the message and shouted congratulations to the young aeronaut. After that he steered the ballon across to Riverside Drive and made a landing near Grant's Tomb. In coming down one of the propeller blades was broken, but he quickly repaired it and started back for Palisades Park.

Meanwhile a brisk breeze had begun to sweep up the river and that, together with the bad behavior of the motor, caused the balloon to swoop down into the river. Several boats started to the rescue and Goodale moved back in the frame and buoyed up the forward end of the gas bag so as to keep it afloat. The balloon was not seriously damaged and the young aeronaut escaped with nothing worse than a thorough ducking in the river.

Zeller Airship Makes Flight.

East St. Louis, June 5.—C. M. Zeller to-day made a successful inaugural flight in a new dirigible balloon, invented by W. J. Smith of this city, but lost control of the gas bag after landing. The big cylinder shot up into the sky and at dark was a mere speck, traveling at a tremendous height.

The ascent was made from Edgemont, Ill. Zeller guided the craft nine miles toward Belleville and then started to return. From the basket of the balloon trailed a long drag rope which caught in the branches of a tree. It became entangled in the propeller and was cut 15 ft. from the basket. The real damage, however, was to the propeller, which was put out of commission.

After landing the airship was being let over some electric wires when the ropes were burned off and the airship darted upward, landing some miles away quite unharmed.

June 21.—Another ascent was made to-day. After performing many evolutions and the ship was about to land, the motor stopped. The motor was got going again only to stop once more, and by that time the ship had drifted some distance away. The plucky one-legged aeronaut let out gas and made a fine descent.

Sensational Airship Flight Over New York.

On July 12 Frank Goodale sprang a surprise on little old New York by sailing his little airship across the Hudson at 130th St. downtown to 42d St., and back again, following Broadway closely both ways. It was 9 o'clock in the morning, when all the office buildings and stores along Automobile Row were awakening and no one could be found who was not looking up at the sky. Going downtown the ship made very good speed, but the head wind on the return prevented fast going. Not since Knabenshue sailed over New York in his dirigible has New York's sky held aerial craft, and Knabenshue is now outdone. Goodale was in the air 50 min. in all and traveled a distance of about 11 miles. On the ground a gusty wind was blowing, but this did not seem to swerve the airship in the least from its course.

Stevens Sells "Continental" Cloth.

Leo Stevens has taken the exclusive agency for the well-known Continental balloon cloth used in the great dirigibles of Europe, for the United States and Canada. He is also agent for the French balloon builders, Carton & Lachambre.

A 1600 cubic meter balloon has been sold by Stevens to E. B. Weston, president of the Ohio Automobile Co., of Dayton, to be delivered August 10th.

"Aeronautics" expresses its thanks to Mr. George H. Guy for his endeavors with the Press on its behalf.

FOREIGN LETTER

$240,000 for Aviation—Public Subscription in England to Buy a Zeppelin—Aero Exhibitions in Europe—Aviators to Fly Across the Channel—Cody Says Wrights Infringe—Monoplane Carries Three—Delagrange and Latham on Cross-Country Flights—Bleriot and Voisin Get $20,000 Prize—Wellman Polar Expedition Delayed Again—Zeppelin Polar Trip—Spain and Holland Alive—Russian Dirigible Makes Fast Time—French Government Divides $20,000 Grant.

JULY 10th, 1909.

Austria.

The Austrian War Department is purchasing a dirigible of 3650 cubic metres capacity and similar to the La Republique.

Belgium.

The first volery to be established in Belgium was opened on June 5 at Brussels. No aeroplanes were ready for the inauguration, however, and the celebration had to be made with six balloon ascents.

Despite heavy rain, the first trials were made on June 27 of the new dirigible "La Belgique," which Robert Goldschmidt built to the designs of Louis Godard. The La Belgique is 78 m. long and has a capacity of 6500 cubic metres. She is equipped with two Pipe motors, each 145 h. p. and weighing 200 kg.

Denmark.

Legagneux, who has acquired a new Voisin, has been giving exhibition flights at Copenhagen during the month. On his first exhibition day thousands of spectators had to go away disappointed because the wind prevented flight. But they were all given tickets for the next day, and seemed satisfied. Several short flights were made, up to 4½ min.

England.

TO FLY ACROSS THE CHANNEL.

All England is now awaiting daily the accomplishment of the feat of flying across the channel that separates England from Europe. Hubert Latham says he will certainly fly across the channel before August 1. On June 27 he was in England selecting a suitable landing place. He had wanted to land at Folkestone, "Because I have some cousins there and it would please them." But he chose a spot upon the Shakespeare Cliff near Dover, with an alternative on the south side of Dover Harbor. To have made for Folkestone would have meant a much longer journey. From Calais to Dover is the shortest distance across. It is about 33 km. Latham thinks of starting from Cape Blanc Nez, near Calais. Henry Farman, who has been at Boulogne, also says he will try for the cross-Channel prize and will start from Sangatte, which is between Calais and Cape Grisnez. Comte Lambert, the Wright's first French pupil, is also near Calais preparing. The French Government has arranged to have a number of torpedo boat destroyers attend each attempt so as to be on hand in the event of need. The English Government will lend no such aid for a trifling event like this.

Lord Roberts has got into action quickly by calling upon the British public to subscribe $250,000 to purchase a Zeppelin to shame the Government, show it what to do, and have at least some protection against the dread aerial fleet of Germany. The "Morning Post," the fashionable two-cent daily, has opened its columns for the collection of the money. But very little is rolling in. Meanwhile arrangements have been made with M. Clement to send over an airship in September, and the Government has accepted the offer of the "Daily Mail" of $25,000 to build a shed for it.

CODY FLYING AGAIN.

Poor Cody is making out finely with his much-despised army aeroplane. On June 18 he flew about a mile and a half in a circle. Many changes have recently been made in the machine. Cody has weighted the front by moving the radiator forward on to the bamboo stays supporting the horizontal rudder. The controls of the wing tips are now connected with the steering gear. A single vertical rudder has replaced the double one, and the aft wheel of the chassis has given place to an ashen spring 7 ft. in length. It would seem as if Cody really has the Wright patents tied up; at any rate, sufficiently so to put up a good fight if the famous brothers wish it. He claims priority on use of a plane warping, and has illustrated newspaper clippings dated Dec. 6, 1902, nearly four months before the Wrights' application of March 23, 1903, showing that he was using such a method in the apparatus, which subsequently he turned into his man-lifting kite. He also claims rights on the wing tips, and has photographs taken in 1904, three years before the Wrights' wing tip patent of 1907.

Henry Cockburn, of the Aero Club, has purchased a Farman, and has made his first flight at Chalons. When he tried to land he pulled the wrong lever, and shot the machine up into the air at so sharp an angle that the lifting plane gave way. The apparatus fell, but was only slightly damaged, and Cockburn was not hurt at all.

Capt. Windham is now building a tandem monoplane of his own design. The planes are square and placed point foremost. The machine is 50 ft. by 24 ft., and weighs only 125 lbs., of course without the engine. The propeller will be in front, and both rudders at the rear point. The framework is of bamboo.

Another new English would-be aviator is trying very hard to get into the air. This is A. V. Roe, who is experimenting vainly on Lea Marshes with a tandem triplane. The machine is of very light construction and has only a 6-h.p. engine. The propellers are in front of the leading set of planes, and the engine is between the lower and middle planes of that set. The aviator sits in the frame joining the two sets. Control is by warping and the two sets work in harmony.

France.

Hubert Latham has been the sensation of the flying world during the month. He has roused France to the wildest pitch of excitement and enthusiasm.

LATHAM CARRIES PASSENGER IN MONOPLANE.

Following his records of 37½ min. on May 22, and 1 hr. 7 min. 37 sec. on June 5, Latham has kept things humming well all the month with the Antoinette IV at Chalons. On June 4 he made a new and curious record. While passing over the heads of the spectators in a 37-min. flight, he took his hands off the control wheel and rolled and lit a cigarette. On June 6 he won the Ambroise Goupy prize for a 5km. cross-country flight. Starting from the Chalons Camp, he flew over trees and houses to the village of Vadenay 5.9 km. away in 4 min. 3 3/5 sec., a speed of about 50 miles an hour, turned in the air and flew back to his starting point.

On June 7 he made still another record, being the first man to take up a passenger in a monoplane. He made four flights and took up a passenger each time. One was a correspondent for the "London Daily Mail," whose trip lasted 11 min. 56 sec., and he found it so easy he was able to make notes throughout. On June 12 Latham flew 49 km. in 39 min. and glided from a considerable height with his engine turned off.

The next evening there was a strong breeze, but he wanted to show a flight to his mother, who had been away on a visit and had not seen him, so he turned out rather than disappoint her. He had flown about 3 m. at a height of 10 m. or so, when a violent gust drove the machine, damaging the left wing and bending the propeller. Latham himself was only shaken.

On June 16th he rose to a height of 60 m. and turned off his engine and glided down, effecting a perfect good landing. On the 18th he was out in a wind blowing at 25 km. an hour and had an exciting struggle in some of the more violent gusts, but managed to maintain his equilibrium. On the 19th he buckled a wheel in landing. Subsequently he devoted his time to preparing for the cross-Channel prize and the chance of winning the more than $10,000 that depended on that feat.

THREE FLY IN MONOPLANE.

Bleriot at Issy also took up a passenger. Andre Fournier, on June 7 in the monoplane Bleriot XII, and on the 12th set a fresh record by taking up two passengers together, A. Fournier and Santos Dumont. But his best work during the month was on his small machine the Bleriot XI. While out with A. Fournier on June 15 in the No. XII he made too steep a landing and snapped his propeller shaft against the ground. On the 19th he got out the small and swift No. XI and flew 4 km. On the 21st he was up for 6 min. On the 25th he extended that to 15 min. 30 sec., despite a sharp 15 miles an hour breeze, and made a perfect landing. The next day, June 26, he started out to set a new monoplane record. But when he had been up for 36 min. 55 3/5 sec. over-lubrication caused his machine to start missfiring and he had to descend. On the 28th he took part in the opening day of the two weeks' meeting at Douai with No. XII, and was the first prize winner, but his flight was only about 2½ km. at a height of some 20 m. The following day he carried a passenger round the course. On July 3 he flew 26 min. 47 sec. On June 21 he nearly lost the small machine by fire. He started filling his tank after a flight and the gasolene caught fire. The spectators quickly lent a hand and buried the flames beneath sand.

Apart from Bleriot, there has not been much flying at the Douai meeting. M. Breguet has made several short hops with his biplane. Yet the Breguet machine will certainly fly all right for Jean Gobron, son of the Senator for the Ardennes, who has one at Issy, on June 26 flew 15 km. and on the 29th covered 10 km. at a speed of 70 km. per hour.

During the second week of the month Delagrange was at Argenton. On June 7 he flew against a post and injured a wing, and on the 8th broke a front wheel in landing. On the 11th he made 6½ km. over trees and farmhouses. Four days later he was back at Juvisy and on the 19th made a couple of short flights. In the first he went twice round the course in 3 min. 50 sec. In the second he went three times round in 3 min. 55 sec.

A good story is told of a Russian count and Delagrange. It is so good that no doubt it is a shame. Delagrange was flying at Savigny-Sur-Orge on June 20 when among the spectators was Count Jarl Hedberg de Caurnet of Moscow, who became so enthusiastic he wanted a flight, too. Delagrange would not consent. "How much do you want for the machine?" cried the count. And right on the spot he placed the money and proceeded to get into the machine. He would listen to no warnings. He went up beautifully. And after he had returned they carried him to a hospital with a badly hurt knee, and all that was left of the machine made a heap in a corner of its shed!

Zeppelin II. at Friedrichshafen

New Russian Dirigible "Russie" Built By the Lebaudys—Returning From a Sortie.

Bleriot XII Carrying Three

Lambert has his Wright at Juvisy, but in his first flight met with an accident. The weight representing a passenger got out of balance, and the machine fell at the end of the starting rail. The left wing and propeller were slightly damaged. On the 19th he made another attempt and was in the air for 12 min. 52 sec., doing eight times round a circular course and a height of about 30 m.

Tissandier has also his Wright at Juvisy, and there will be no more flights on what is now known as the "Wright Aviation Ground" at Pau until September. M. Tissandier gave his last lessons there during June. The old Wright is still in the shed, but the new motor that was put on it is to be taken to Jovisy where the old motor is now in use in new surfaces.

"F. de Rue" is the "aviationym" for a prominent French sportsman who has taken to flying and has had an interesting month at Port Aviation. On June 5 he won the Archdeacon Cup from Delagrange with a flight of 6½ circles of the course. It is said quite a high wind was blowing at the time. On June 13 while trying to make a record for the Rolland Josselin fastest 5 km., he made the distance in 5 min. 34 sec., and was gliding down with his engine turned off when by accident his elbow caught against the ignition lever and so restarted the engine. Before the motor could be turned off again the biplane was driven full tilt into the members' refreshment room. De Rue escaped unhurt but the machine was badly damaged—also the refreshment room. On the 27th, after a flight of about 2 min., the motor suddenly stopped and the machine landed heavily but only slightly damaged itself. De Rue then found that he had gone up without filling his gasolene tank.

Six to seven kilometers was about the best Farman could get out of his new machine at Chalons without something going wrong. But on June 28th he managed to keep up for 21 min.

Santos Dumont had his little Demoiselle out on June 19th and she fell on her tail. The damage was not great and Santos Dumont was only shaken.

Ogier, a new aviator at Issy with a Regis Freres biplane, made several short flights on June 27. Then he soared up to a good height when suddenly the machine fell forward and came down with a crash. The motor, propeller and planes were badly damaged, but Ogier was not hurt any.

Another new arrival at Issy. Paulhan has a Voisin and on June 28 made several flights of about 200 metres.

$240,000 FOR AVIATION.

Henri Deutsche de la Meurthe has given $100,000 and promised a further $3,000 annually to the University of Paris for a department of aeronautics, and $140,000 for the same purpose has been donated by Basil Zakaroff, a great resident in the gay city. The French Institute has divided the Osiris prize of $20,000 between Bleriot and Gabriel Voisin. Daniel Osiris, who founded the prize, died only a couple of years ago. Eight years before his death he gave funds for a triennial prize of $20,000 open to all the world to reward remarkable works or discoveries of general value. He also purchased Malmaison and presented it to the French nation.

At last the French Government has decided on the division of its $20,000 grant. $8,375 goes to the Aero Club de France, $7,600 to the Ligue Nationale Aerienne, $1,000 to the Societe Navigation Aerienne, $1,000 to the Automobile Club de France for its aerodynamic laboratory at Lavallois, $800 to the Nancy exhibition, and the balance in various ways. The L. N. A. is buying two Wrights with its portion of the grant.

With Henri Kapferer as its pilot, the new dirigible Ville de Nancy made its first public appearance on June 27 with a successful trip from Sartrouville to Longchamps and back. It has been built by the Astra Co. and is similar to the Clement Bayard. A speed of 40 miles an hour is claimed.

Walter Wellman and Melvin Vaniman left Paris on June 20 for Spitsbergen to prepare the airship America for his second attempt to reach the North Pole. On starting he stated his hope that all would be ready for a start on the great trip by July 20, and he asserted his conviction that he would not fail to reach the Pole this time. But a woeful disappointment awaited him. On June 28 the ship Arctic put into Tromsoe from Danes Island and reported that on Boxing Day, Dec. 26, last year, a gale blew down the airship shed and killed Knut Johnson, one of the members of the expedition passing the winter there. Wellman was just on the point of starting on the Fram. He was greatly downcast by the news, and, puting his things back ashore, decided to wait until carpenters could go ahead and erect a new shed. It is thought hardly likely now that the expedition will be made this year.

The Aero Club de France issued its first pilot's certificate to a woman this month. The recipient was Mme. Surcouf, president of the woman's balloon club Stella, who made her 28th ascension on June 16.

Germany.

It is declared in Berlin that Count Zeppelin has obtained the protection of the Kaiser for an airship expedition to the North Pole under the guidance of Prof. H. Hergesell of Strasburg University. A ship is to be built for the purpose, the rumor says, and in it Prof. Hergesell will investigate the North Pole suburbs next summer from Cross Bay, Spitsbergen, preliminary to making the attempt on the Pole itself, possibly in 1911.

Zeppelin has announced that he will make his next attempt from Friedrichshafen in the Zeppelin II on Aug. 26.

On June 29 the Zeppelin I sailed from Friedrichshafen for Metz, where it is to be stationed. Some trouble arose with the motor and a delay of five days was made at Biberach, in Baden, about 100 miles from Friedrichshafen and half way to Metz. A battalion of soldiers was called out to hold the great ship down until it could be anchored. Part of Lake Lucerne is to filled in to form a foundation for a Zeppelin shed.

Major von Parseval, builder of the famous Parseval airship, is constructing a monoplane. It is, he says, 14 m. wide and 12 m. long, and will have a long floater under the center and two at each side for landing on water. The propellers will be placed in front driven by 100-h.p. Mercedes motor. The weight will be 1200 kg. and it is to carry three people. The major holds that the monoplane has a better chance of righting itself in a fall than the biplane has.

The German Wright Co. has completed two machines and has ten under construction. One of the completed ones is to Frankfort Exposition.

The Parseval III which is to go to Frankfort to carry passengers on excursions during the exhibition made a trial trip from Bitterfeld June 28. It passed over the town at a height of 700 m. and was perfectly under control.

It is said that one of the most interesting features of the new Schutte airship will be an arrangement whereby the gas which has to escape during the expansion of the wooden envelope will be retained by a compressor and so can be returned when necessary.

Holland.

On June 27 Comte Lambert gave a demonstration at Essen, near Breda, giving several flights over a circle of 1 km.

Italy.

Lieut. Calderara completely recovered from his accident, resumed flights at Rome July 1 in the Wright machine which had been repaired. He is speaking of building on his own design.

Japan.

Charles K. Hamilton, who was at Brighton Beach last year and has since been in Japan, has been at Kawasabi during the past month making successful flights with his little airship.

Russia.

In its trial flights the new dirigible "La Russie," built by the Lebaudys for the Russian Government, made a speed of 60 km. an hour over a measured 10 km. at Paris.

On June 18 the army balloon burst at a height of 2400 ft. M. Palitzin, Court Chamberlain, was killed, Capt. Korbe broke a leg, Mme. Palitzin was seriously hurt also. A fourth passenger was unhurt.

Spain.

The Spanish Government has made a grant for aviation and Capt. Kindelan is to select models to be adopted for full size construction. Interest is manifesting itself throughout Spain. Two sons of the Marquese de Salamanca, Conde de Los Llanos and Don Carlos are building in Madrid. Other machines are being constructed.

Sweden.

Our esteemed and valuable British contemporary "Aeronautics" says that a Swedish engineer has constructed an entirely new airship in which he has utilized Montgolfier's system of heated air. The new

(*Continued on page 79*)

LANGLEY'S IMPORTANT WORK

By John W. Mitchell.

DURING the present revival of interest in the subject of aerial flight, but scant credit is given in the popular mind to the man who more than all others advanced the art to the position it occupies to-day, and who made the first model machine that actually flew by mechanical power without the aid of a gas bag. That man is the late Samuel Pierpont Langley, recently secretary of the Smithsonian Institution, perhaps the most eminent scientific position in America.

Prof. Langley began as early as 1888 to investigate the problem of mechanical flight, a problem that till then had been left almost entirely in the hands of cranks and visionary inventors. It is of interest to know that the first money for his experiments was given by William Thaw of Pittsburg, father of Harry Thaw. William Thaw was then one of the financial giants of the country. Carnegie, Phipps and Rockefeller were just coming into their own—or into other peoples', as one chooses to look at it. The Langley experiments were outlined to Carnegie as a matter of fact, and he laughed at them and refused to give any assistance. William Thaw gave $5,000, part of which Prof. Langley spent on his first whirling table. His important book on The Internal Work of the Wind is dedicated to William Thaw.

It was prior to 1895 that Prof. Langley built his first steam driven aerodrome. It flew in the presence of Alexander Graham Bell and a few other friends at Widewater, on the lower Potomac. Three steam driven models were built, and in 1896 Prof. Langley announced the general results of his work to the scientific world, saying that he had demonstrated the possibility of mechanical flight, and that he looked to other and younger men to take up the problem and develop it on commercial lines.

If he had stopped there, his scientific fame in that direction would have been unassailable. It was already established in astrophysics as every scientific student knows. But in 1898 when it was practically certain to government officials that this country would drift into war with Spain, Mr. Roosevelt, who was then Assistant Secretary of the Navy, urged that Prof. Langley should be commissioned to build a man-carrying flying machine as an engine of war.

This project was reported on favorably by a board of army and navy officers, and the work was done under the auspices of the Board of Ordnance and Fortifications. The general outline of what followed is known through the daily papers only in distorted form. The gasoline engine had been developed at that time, and Prof. Langley saw that it offered a better power medium than steam. After applying to all of the great engineering firms, he was forced to build his own engine along original lines. It stands in the National Museum to-day, the most powerful and reliable motor weight for weight that has ever been constructed. It weighed two pounds to the horsepower, and developed 52½ horsepower on the brake.

The success or failure of the machine now depended on the launching. A new machine of any sort seldom works satisfactorily till after several trials, but Prof. Langley would not take the risk to the operator of having the machine launched over dry land. His models, one a quarter the size of the big machine, had all been launched and had flown from a launching machine rigged up on the top of a house boat. Charles M. Manly, who built the engine, and was to have the honor of driving it, was anxious to take chances and start on land. Several army and navy officers on the board were in favor of this course, but Prof. Langley let humane motives override scientific ardor, and insisted on the water launch as being safer for the operator.

This method was tried twice, and both times failed owing to tiny points of steel catching on the launching frame. The machine never really got into the air, and never had the chance to fly. Those on the inside knew this, but the spectators, all of them newspaper men, did not. Prof. Langley had vainly tried to keep them away from the trials, as secrecy had been imposed on him by the government, but they were there with binoculars and telephoto cameras, and when they saw the apparent failure of the machine, they very humanly, though unchristianly, rejoiced in it, and did not even give the machine the benefit of the doubt. The ensuing newspaper criticisms not only hurt Prof. Langley bitterly, but had the effect of deterring Congress from appropriating any more money for experiments. Aid was offered to the Professor from private sources, but he replied that if the American people would not support a work carried on especially for their benefit, he would do nothing more.

The big machine is now in the workshop of the Smithsonian, partly dismantled, but capable of easy reassembling and repair. Whether it ever will be repaired and flown is a question. It is the joint property of the War Department and the Smithsonian Institution. Some of the army officers are anxious to give it a further trial, which would cost at the most three or four thousand dollars. The officers of Smithsonian, who feel that Prof. Langley was badly treated, are reluctant. The machine is there, however, and is one of the most marvellous pieces of workmanship ever constructed. But whether it ever flies or not, the preeminence of Prof. Langley as an aerial investigator is already recognized by the scientific world, and will eventually be recognized by the public.

PAPERS OF THE
INTERNATIONAL AERONAUTICAL CONGRESS

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AIRSHIP PROPELLER PROBLEMS

By Prof. Calvin M. Woodward

[The manuscript of following paper was received a few days after the program was printed.]

1. What is the Horse-Power Required to Produce a Given Pull or Thrust by Means of One or More Air-Ship Propellers, When the Frame is Anchored?

The net horse-power of the motor is measured by the kinetic energy imparted to the air acted upon by the propeller. I assume that an absolute velocity of v feet per second is given to a cylindrical stream of air, originally still, and that the cross-section of the stream (or streams if there be more than one propeller) is the same as the area of the propeller circle (or circles). Call this area A sq. ft., and let the given or required pull or thrust be P lbs.

Since the thrust forward, or pull upon the anchorage, must equal the backward push upon the air, we have the general equation

$$P = Ap \ldots\ldots\ldots\ldots\ldots\ldots\ldots [I]$$

in which p is the average push or action in lbs. per sq. ft., upon the cylinder of air.

Hence the volume of air acted upon and set in motion every second is Av; its weight is Awv, in which w is the weight in lbs. per cu. ft.; its mass is $\frac{Awv}{g}$; and its kinetic energy is $\frac{Awv^3}{2g}$, being the mass into half the square of its velocity.

Now v is determined by p in accordance with the laws for the flow of gases; but since p is small compared with ordinary atmospheric pressure, all changes in density and temperature may be neglected, and the flow of air may be assumed to follow closely the laws of the flow of liquids.

The pressure of p pounds per square foot in the cross-section of the cylinder of air produces a flow or current like the flow or current thru an opening between two indefinitely large tanks of air in one of which the atmospheric pressure is 2117 lbs. per sq. ft., and in the other, 2117 + p lbs per sq. ft.

Hence I use the familiar hydraulic formula

$$v^2 = 2gh$$

in which $2g$ is approximately 64 and h is the "dynamic head" of the current whose value is

$$h = \frac{p}{w} = \frac{P}{Aw} \ldots\ldots\ldots\ldots\ldots [II]$$

$$\text{Hence } v = \sqrt{\frac{2g\,P}{Aw}} = \frac{16}{r}\sqrt{P} \text{ nearly} \ldots [III]$$

if $A = \pi r^2$, and $w = 0.08$.

Substituting for v in the expression for the kinetic energy, we have the Kinetic Energy of the air-current, and hence the work done per second by the motor-driven propeller is

$$K.\,E. = \frac{Aw}{2g}\left(\frac{2g\,P}{Aw}\right)^{\frac{3}{2}} = \frac{16}{r}P^{\frac{3}{2}} = v\,P \ldots [IV]$$

so that we have for the net horse-power actually exerted, dividing by 550, the horse-power-work in one second,

$$H = \frac{v\,P}{550} = \frac{8P^{\frac{3}{2}}}{275r} = 0.0515\,\frac{P^{\frac{3}{2}}}{A^{\frac{1}{2}}} \ldots\ldots\ldots [V]$$

approximately.

This formula gives the horse-power required by means of a propeller of radius r to maintain a steady pull or thrust of P lbs. If there are two or more propellers acting without the least interference, then their combined area is represented by $A = \pi r^2$.

In the formulas [III], [IV], and [V] r is the radius of the circle equivalent in area to the combined area of all the propellers.

The above case may be illustrated by a suspended frame carrying a motor and propellers with horizontal shafts in a yard or a large laboratory. The frame should be anchored by a cable attached to a spring balance, or passing over a light and easily running pulley be attached to an adjustable weight P. It is assumed that the propeller is correctly designed for the velocity v of the air-current. For discussion of the design of the propeller see § 10.

Instead of a motor driving a horizontal shaft, one may use an electric motor and a vertical shaft, with arrangements for measuring the *lifting* or depressing effect of the propeller when in motion.

2. What is the Horse-Power Required to Drive an Air-Ship in Still Air Against a Known Resistance P at the Rate of V Miles per Hour.

If all the air acted upon by the propeller be given an absolute velocity of v ft. per second, it is evident that the volume of air acted upon per second is now $A\ (v + v')$ in which v' is the velocity of the ship in feet per second.

To make this truth still more evident, it may be added that if we assume that the air-ship is drawn or towed thru the air by some other ship or motor, at the rate of v' ft. per second, our propeller standing still, the air would pass thru it, at the rate v' feet per second, or it would *appear* to do so, though really standing still. Now if the propeller be started and turned fast enough to press p lbs. per sq. ft. upon all the air passing, so as to give it an *absolute* velocity of v feet per second, then the *relative* or *apparent* velocity of the air passing thru the propeller would be $v + v'$ ft. per second, so that the volume of air acted upon every second would be $A\ (v + v')$.

A speed of V miles per hour is $\frac{22V}{15}$ feet per second.

Hence $v' = \frac{22}{15}V.$ feet per second.........[VI]

The mass of the volume actually acted upon per second is $A\ (v + v^1)\ \frac{w}{g}$, and since the velocity imparted to this mass is v, the kinetic energy generated in the air-current second is

$$\frac{Awv^2}{2g}(v + v') = \frac{Awv^3}{2g} + \frac{AwV^2v'}{2g} \ldots\ldots\text{[VII]}$$

The first term of this result is identical with the value of $K.\ E.$ given in equation [IV], and its value is accordingly $\frac{16}{r}P^{\frac{3}{2}}$; the second term, $\frac{Awv'v^2}{2g}$, when we substitute for v^2 its value $\frac{2g\ P}{Aw}$ from [III], becomes Pv', which is exactly what should have been anticipated; viz: the work done per second in overcoming the resistance of the air to the motion of the ship. Accordingly the horse-power required for the ship *when in motion* is

$$H' = \frac{P}{550}\left(\frac{16\sqrt{P}}{r} + \frac{22V}{15}\right) = \frac{P\ (v + v')}{550}.\text{[VIII]}$$

The atmospheric resistance of still air upon a moving ship is taken to be the same as the resultant action of moving air upon a stationary ship, the velocity in the two cases being the same. The general equation for such resistance is in pounds

$$P = C\pi R^2V^2 \ldots\ldots\ldots\ldots\text{[IX]}$$

in which R is the radius of the maximum cross-section of the air-ship in feet; and V, as before, is the velocity of the ship in miles per hour. C is a coefficient dependent upon the shape of the ship and the nature of its surfaces. An approximate value of C for a cigar-shaped air-ship with fairly smooth surfaces is 0.002. An exact method of determining P would be to measure the pull on a cable when the ship is anchored against a steady wind blowing V miles per hour. Probably no two ships would yield the same value of C in formula [IX].

3. Discussion of Formula [V] for the Case of an Anchored Ship, with a Motor Driving a Propeller Whose Radius is r.

$$H = \frac{8P^{\frac{3}{2}}}{275r} = 0.0515\ \frac{P^{\frac{3}{2}}}{A^{\frac{1}{2}}}$$

For a given value of P it is seen that the horse-power required varies inversely *as the* radius of the propeller. This suggests the economy of large propellers, or of an increase in their number. There are of course practical objections to very large propellers, and also to a large number of propellers. I venture to suggest for a ship three propellers, one rather low at the stern, and one on each side, well forward, and higher up, abreast or above the uppermost member of the frame truss. In these positions, the propellers would create currents which would not sensibly strike the motor frame and car, or any part of its rigging, and hence would not retard the ship.

With given propellers it is seen that the horse-power required for a greater value of P increases more rapidly than does the value of P. For example, if P is made four times as great, the horse-power required is eight times as great. If P is multiplied nine times, the H must be increased 27 times. If however the face area of the propeller, A, increases equally with P, then the horse-power required to pull (or lift) will increase exactly with P. This appears from the equation above since

$$\frac{H}{P} = 0.0515\sqrt{\frac{P}{A}} \ldots\ldots\ldots\ldots\text{[X]}$$

If $\frac{P}{A}$ is kept constant, $\frac{H}{P}$ is also constant.

4. Discussion of Formula [VIII].

$$H' = \frac{8P^{\frac{3}{2}}}{275r} + \frac{Pv'}{550}.$$

If the value of P given in [IX], and the value of v' from [VI] be substituted in the above, it becomes

$$H' = \left[\frac{8\ (C\pi R^2)^{\frac{3}{2}}}{275r} + \frac{C\pi R^2}{375}\right]V^3 \ldots\ldots\text{[XI]}$$

from which it appears that the horse-power required to drive an air-ship increases with the *cube of its velocity.*

(Concluded in the September Issue.)

News In General

Incorporations.

"The Flexible Aeroplane Co.," of Newark, N. J., has been incorporated to manufacture automobiles, aeroplanes, etc., capital $100,000. Incorporators, T. Formanns, J. R. Murgatroyd and H. Taylorson.

"International Aerial Navigation Co.," organized with $5,000,000 capital stock by J. W. Oman and others; has purchased 35 acres near San Antonio and will establish plant for manufacturing aeroplanes.

"Bachmann Aeroplane Company," Newark, N. J., capital stock $30,000. The incorporators are Frederick Bachmann, Frank G. Dehe and John Mossman, all of Newark.

"Black Crow Mfg. Co.," Babylon, Ill., to manufacture airships; capital $35,000. Isaac Hubbell, Fulton, Ill.

Patent List.

"Flying Machine," John H. Wilson, Middlesex township, Cumberland Co., Pa. No. 926,159, June 29, 1909. Biplane construction having planes supported on trunnions provided on supporting frame so that angle of incidence is adjustable. Rear vertical rudder is provided between superposed propellers.

"Aerodrome," Harry H. Orme, Wesley Heights, D. C. No. 926,593, June 29, 1909. Triplane of which highest plane is the controlling one and comprises a series of radial ribs. Means are provided for moving the tips of the ribs both simultaneously or independently in groups. A plurality of front and rear planes are provided for additional control.

"Airship," Philip H. McConnell, Syracuse, N. Y. No. 925,494, June 22, 1909. Novelty consists in a propeller described as a fan comprising radial spokes with arms and webs so connected and operated by cams that these blades of the fan can be opened and closed.

"Flying Machine," Wallace A. McCurd, North Finchley, England. No. 924,813, June 15, 1909. Machine consists of a plurality of superposed planes adapted to be set at different angles of inclination. One-half of said planes are arranged to move in a direction opposite to the other half.

"Aeroplane," James H. Rogers, Hyattsville, Md. No. 924,833, June 15, 1909. Monoplane, the characteristic feature of which is a body composed of a central tube from which a wing extends at each side.

"Aeroplane Flying Machine," August Beriozzi, San Francisco, Cal. No. 923,936, June 8, 1909. A bird-like structure provided with sails on the body portion, from which is suspended a car movable from front to rear for the purpose of changing center of gravity.

"Airship," James M. Park, Pittsburg, Pa. No. 458,013, June 8, 1909. A vertical stem supporting gas envelope at upper end and car at lower end, both revolubly mounted. Means are provided in the car for imparting rotary movement. Also propeller operated by engine and suitable rudder in addition to the other control.

Aero Publications.

"The Conquest of the Air; The Advent of Aerial Navigation," by A. Lawrence Rotch, S. B., A. M., Professor of Meteorology at Harvard University, and Director of the Blue Hill Meteorological Observatory, author of "Sounding the Ocean of Air," etc., has just been published. The book considers the sensational achievements of the past year in their relation to the long history of past failures; it discusses some of the scientific possibilities of the future. Many illustrations. 16mo, $1.00 net.

Spon & Chamberlain, 123 Liberty Street, have just received a supply of a most interesting booklet entitled "Model Aeroplanes," by E. W. Twining, which is sold at 50c. The book describes and fully illustrates three different types of biplanes, and in addition to the book there is supplied five sets of full-sized drawings. This book should prove of great interest to the aeronautic youth of America.

"Aeronautischer Kalender," 1909-10, second year, by J. Riecken, published by Richard Carl Schmidt & Co., W. Keithstrasse 6, Berlin, Germany, at 3 marks. The author, a well-known special writer in this line, offers in a 300-page, pocket size, cloth bound book, a great deal of valuable information on ballooning, together with a list of all the ascents made in Germany last season, prizes, etc., in addition to blank memorandum pages and ascension record forms. It gives a history of the prominent voyages last year, and contains an article on the practice of ballooning.

"The Aero" is the latest in aero journals, published weekly by Iliffe & Sons, Ltd., London at $2.08 a year. It might be called a revival of "Flying," published for six issues in 1901 by the same company. Here's to success!

"Encyclopedia de l'Aviation" is the title of a new and unique aeronautical monthly issued in Paris. We can recall no previous art the interest in which has been keen enough to produce a magazine of similar usefulness. Each month, under headings in alphabetical order, in the ordinary form of an encyclopedia, it gives an analysis of all the articles upon aerial locomotion which have appeared during the month in the aeronautical publications of the world. Similarly, it gives descriptions of all notable apparatus, notes on new patents, biographies of aviators, notices of books, and much other valuable information, such as methods of calculation and construction. It also gives a brief resume of the news of the month. The publishers are: Librairie Aeronautique, 32 Rue Madame; $1.40 a year.

"Flying, The Why and the Wherefore," is a title of an interesting little book published by The Aero, 20 Tudor St., London, E. C., at 35 cents, post free. It is not a "handbook" of flying nor an historical treatise, but a most invitingly written explanation of the why and wherefore of the various machines that have flown, of the theories on which their construction has been carried out, and makes suggestions for further improvement. It is the book for the onlooker, though it will prove of considerable value to the experimentor. It puts in simple language the technical terms of the expert and brings flying within the comprehension of the laity. It is confined solely to dynamic flight.

The "Trouble Finder," published by Whitman and Cameron, 146 W. 56th St., New York, will be found a source of value and a joy forever by those who have anything to do with motors and automobiles. Every possible derangement of any conceivable part is listed with a notation opposite telling how to find and fix the trouble. If you do not know what is the trouble, look through the list of symptoms and you will readily locate the remedy. The price is 50 cents.

An aeronautical topic of interest is the early appearance of a book by Prof. T. S. C. Lowe, of Los Angeles, Calif., upon the balloon during the Civil War. In a letter from Prof. Lowe he says that the early publication of his work seems assured. He certainly is working away with all the vigor that his years permit. Prof. Lowe, as one will remember, was in charge of ballooning during the Civil War under the Quartermaster Department. He seems to have received very little encouragement, but nevertheless did some good work. He has become wealthy, and it was only last New Year's Day that he opened his box containing all the data of his Civil War experiences, since when he has been preparing his memoir.

Sky Scrapings

Samuel F. Perkins, the expert kite flyer, is attracting attention with his kite and flag display at Coney Island, where he has a summer engagement. The most striking feature is the big banner 'Read 'Aeronautics' " flown at night with a beam from a searchlight thrown upon it.

Hiram Morgan, son of F. W. Morgan, of Morgan & Wright, the tire manufacturers, has built a glider weighing 65 lbs., 21 ft. spread.

The boys of Public School 77, First Avenue and 76th Street, New York, have taken up kite flying in earnest under the guidance and encouragement of the manual training teachers. A kite-flying contest was held by the enthusiasts on May 24th on the fields near Astoria.

Another glider is being experimented with by John Burton, of Hamilton, Canada. It measures 20 ft. spread. 4 ft. front to rear, and 3 ft. between surfaces, and weighs only 25 lbs. The first trial resulted in a crash on account of not tilting up quickly enough.

E. T. Odom, Birmingham, Ala., has applied for a patent for a flying machine, and is looking now for capital.

Daniel C. Shutt, of Chattanooga, Tenn., has built a dirigible balloon model, and is rushing work on a full sized machine to be ready by July 4th. It resembles much the Knabenshue airship.

Cheney Prouty, of the Iowa Automobile Co., Des Moines, Ia., has been experimenting with a glider. The first machine was wrecked in gliding flight.

John D. Pursell, of Chattanooga, Tenn., has brought out his aeroplane for tuning up. The government has kindly appropriated a shed for storing the machine, and one of the several parade grounds in the vicinity of the city is fine for trials. Mr. Pursell is figuring on a 4-cyl. 2 cycle revolving motor. He thinks that one of 40 h. p. could be built to weigh 80 lbs., and turned out commercially for less than $200. He is also interested in the Sirch idea for a hot-air dirigible, and is getting out a patent to sell Sirch when he starts building.

J. Clarke, of Chicago, is building an aeroplane.

Hugh L. Willoughby, who started work on an aeroplane last winter at his Florida place, is now in the north, and will continue construction on the sea coast. He has become a convert to the heavier motor, and is using a stock engine of the Pennsylvania Auto Motor Co., 30 h. p., weighing with 30 lb. flywheel, magneto and oiler full for 200 miles, 420 lbs.

Reuben Bassett and A. Carlson, two young men of Hartford, have been making trials with a glider on Prospect Hill. Bassett essayed the first flight of seventy feet, but in landing the wing tipped the ground and broke a rib and the rudder, so Carlson had to wait for repairs. The end of May further attempts were made. A broken rib unbalanced one side, and after four or five trials were made, more ribs were broken. The glider measures 20 by 4 feet, with 20 slender curved spruce ribs. Six upright struts space the surfaces 4 feet apart, and the whole, as well as the rear rudder, is covered with cambric.

A Mr. Bourdin, of San Francisco, is constructing a monoplane, the novel feature of which is the movable engine and directly connected propeller, which, being pivoted in front of the machine, it is supposed, will allow of direction control of all planes.

Roswell Northrup, 12 years old, and Floyd Nicholson, 13 years old, of Iola, Kans., have just completed their first attempt as builders of aeroplanes, having constructed a glider which is a great success and their first trial has recently been made. The machine 22 ft. long and 5 ft. square, is in the shape of a huge box kite, and is covered with a heavy cloth. While about 40 feet in the air pictures were taken, so as to prove to any doubting parties that the machine actually flies.

Cyril King and E. E. Butterfield, of Lewiston, Ills., have been experimenting with a glider. It is 20 feet in length and 4 ft. wide. Muslin is used in the construction of the sails or wings, and the framework is made of spruce and imported piano wires are used in making the braces. The weight of the machine as it now stands is about 75 lbs. The operator has a place in the center of the machine, and just back of him is a vertical and horizontal rudder which is fastened by bolts to the main part of the machine. The spruce frame work is held together with bolts, and these same bolts serve to hold the wire braces. After the trial flight it was necessary to go over the machine and tighten the bolts and braces. At this time there is no way of balancing the machine except by the moving of the legs and body.

Ballooning to Canada.

The prevailing winds six months in the year commencing about this time, make it quite possible that the trophies will be won during the year 1909. The air line distance from Pittsfield to Montreal Island is only two hundred and ten miles, and to reach this point the wind must blow from a direction about five degrees east of south. The 3,500-cubic-feet-capacity balloons have already covered one-third of the distance, and the "Massachusetts" and "Springfield," being 56,000 cubic feet, would have no difficulty in reaching a point even beyond the City of Montreal.

To accomplish this task the start would probably be made in the evening, possibly an hour before midnight, the balloons holding a low altitude and sailing northward taking advantage of the lower currents. A careful study of the weather map at the time the depressions were en route from the west would determine the time of starting. One familiar with air currents says with the depression designated as "low" over Lake Ontario would probably cause the wind to blow from the desired direction as this gradually moves easterly to the St. Lawrence Valley. The Committee on Balloons and Ascensions will arrange a few details of the contest to be submitted to the Canadian people for their approval.

Secretary W. S. Shrigley says this offer of trophies will do more to encourage long distance ballooning in New England than any move since aeronautics became so popular, and that he hoped to be in the balloon that wins the prizes. Mr. Glidden, of the Ascension Committee, who has had considerable correspondence with our Canadian neighbors on the subject, says he expects to make several attempts to reach the localities designated before the close of the season, and believes that the offers will create pleasant rivalry between members of the various clubs in the United States, as the contest is open to all clubs having starting facilities south of the latitude of Poughkeepsie and in Massachusetts.

Helium for Airships.

Helium is the ideal gas for all lighter-than-air airships, said Professor Erdmann the other day in a lecture in Berlin. Had Count Zeppelin used it. he declared, the catastrophe at Echterdingen last August would never have occurred.

While its lifting power is about 1.11 kilogrammes a cubic metre, or little less than that of hydrogen (which is given at 1.20 kilogrammes), it is neutral and non-inflammable, and can stand a cold of 268.5 degrees centigrade without liquefaction. The difficulty is to get the helium. The small quantity of 400 litres possessed by the Leyden University is cherished as a treasure.

ASCENSIONS

FITCHBURG, May 4.—Chas. J. Glidden, pilot, and J. Walter Flagg made a two and a half hour trip to Atkinson, N. H., 38 miles, in the balloon "Boston." Highest altitude, 10,400 feet.

CHRISTENING OF CLUB BALLOON.

MILWAUKEE, May 8.—Maj. H. B. Hersey, John H. Kopmeier, and John H. Moss, president of the Milwaukee Aero Club, today made the first trip in the new Stevens-built balloon "Pabst," presented by Gustave Pabst to the Club. After it was christened with a bottle of Pabst "Blue Ribbon" by Miss Jane Fairweather, at 5.30 p. m., it left the ground for an hour's trip, landing about 28 miles from town, near Cedarburg, Wis. Mr. Pabst and his party followed the balloon in an automobile, and an hour after the landing found the aeronauts, and they all ate a bountiful supper at a country farmhouse. The highest altitude was 2,000 feet. This was Major Hersey's fifteenth ascension. Mr. Stevens was of course on hand to superintend the inflation and to see that everything was right. He's always around—you positively can't lose him! Four hundred thousand spectators were present, and more than a page in the daily papers was devoted to the event.

SAN FRANCISCO, May 8.—Roy Knabenshue, A. C. Pillsbury, of San Francisco, and George B. Harrison, of Los Angeles, in the "United States," started to-day from the former site of the Mechanics' Pavilion near the ruins of the City Hall, and the balloon drifted over the business section until the bay was reached two blocks north of the ferry. There it was sent up through the sea fog, 1,000 feet thick, and the upper current took it southward three miles. While above the fog the "United States" attained an altitude of 11,400 feet. Only the top of Mount Tamalpais could be seen as a landmark, and when the balloonists descended into the fog and heard the sound of waves below them they did not know whether they were over the bay or the ocean. Their course rounded the government drydocks at Hunter's Point, and eastward across San Francisco Bay, Alameda, East Oakland and toward the hills. A descent was made in Redwood canyon after a voyage of twenty-three miles. Mr. Pillsbury obtained a number of photographs of the district of San Francisco rebuilt since the disaster of 1906, and of the fog as seen from above it. The trip was the first made by a balloon over San Francisco since the earthquake.

FORT OMAHA, May 10.—Capt. Chas. De F. Chandler and First Lieut. James E. Ware left Fort Omaha in the Army hydrogen balloon "No. 12," of 19,000 cu. ft., at 11.12 a. m., landing near Jackson, Nebr., at 6.30 p. m., distance 83 miles. When within two feet of the ground the gas exploded. Elapsed time, 7 hours, 18 minutes. This makes the eighteenth trip for Capt. Chandler and the first for Lieut. Ware. (See article last issue.)

NORTH ADAMS, May 12.—Double ascent by Dr. R. M. Randall and A. D. Potter. (See July, '09, issue.)

WASHINGTON, May 12.—Lieuts. Lahm, Dickinson and Winter made an ascent in the "Signal Corps No. 11," landing twenty miles away at Cheltenham, Md.

CANTON, May 12.—A. H. Morgan and J. H. Wade, Jr., left about 3 p. m. in the new balloon "Cleveland," with the expectation of crossing Lake Erie, but the wind was not sufficient, and atmospheric conditions prevented. The landing was made near Ravenna, O., at 6.15 p.m., a distance of 26 miles.

NORTH ADAMS, May 15.—Wm. F. Whitehouse, pilot, N. H. Arnold, and R. Baldwin, in the "North Adams No. 1," reached Shelburne, Mass., about 22 miles away, in a night trip, made to qualify Mr. Whitehouse as pilot, with Mr. Arnold as critic.

PITTSFIELD, May 15.—Chas. J. Glidden, Geo. Otis Draper, and Frank B. Comins left here in the Aero Club of New England's new balloon "Massachusetts," of 1,600 cubic meters, on its first trip, at 11.45 a.m., landing at Plainfield, Conn., after 4 hours and 40 minutes. Highest altitude, 9,000 feet; distance, 84 miles.

NORTH ADAMS, May 16.—Wm. F. Whitehouse alone in the "Greylock," landing at Sunderland, Vt., after two hours, a distance of 31 miles. This completed the ascents necessary for pilot license.

WASHINGTON, May 17.—Lieuts. F. P. Lahm, Dickinson and Bamberger made a trip in the "Signal Corps No. 11" at 11.48 a. m., landing at Mullikins, Md., at 1.21 p. m. The greatest altitude was 3,700 feet; distance 20.5 miles.

INDIANAPOLIS, May 17.—The balloon season opened this afternoon, when G. L. Bumbaugh, Russel J. Irvin and Dr. Goethe Link made an ascension from the plant of the Indianapolis Gas Company, at Twenty-first street and Fall Creek. The ascension was the third of a series of ascensions by Irvin and Dr. Link in order to qualify as pilots for the national balloon race of June 5.

After a short trip over the city, the aeronauts landed four miles southeast of the start.

PITTSFIELD, May 19.—Wm. Van Sleet piloted A. D. Converse on the latter's second trip for 3 hours 40 minutes from here to Huntington, a distance of 24 miles.

MILWAUKEE, May 20.—Second ascent of the "Pabst," Major H. B. Hersey, pilot; Prof. Warren B. Johnson and Col. E. P. Vilas, passengers. After a two-hour trip it landed near Palmyra, Wis., 38 miles. Highest altitude, 4,500 feet. President Moss, of the club, who was following the balloon in an automobile, came upon a man aiming a rifle at the balloon, and stopped him just at the moment of his attempting to fire. The man will be prosecuted by the club.

SPRINGFIELD, May 20.—After being in the air four hours in the "All America," landing in a tree was made at Lake Onota, near Pittsfield, 42 miles distant. Piloted by A. Leo Stevens, the passengers were C. E. Wyckoff, Le Roy Taylor, C. B. Harmon, A. J. Pickard, and James H. Hare.

NORTH ADAMS, May 21.—N. H. Arnold piloted A. D. Converse, W. H. Richardson and C. E. Martin in the "North Adams No. 1" to Greenwich, N. Y., a distance of 34 miles. Duration 1¼ hours.

INDIANAPOLIS, May 22.—The initial balloon trip from the Indianapolis Motor Speedway was made to-day. Three "captive" trips were made before Carl G. Fisher and Capt. G. L. Bumbaugh "let 'er go."

Fisher has three qualification trips to his credit as the result of these experiences. Three landings were made, counting on his list of trips required by a pilot in the national race.

The first landing was made near Bridgeport. Roy Foltz, John Hoffman, and Henry Turlin were the witnesses. The second drop to earth was made five miles south of Bridgeport, in Decatur township. H. Moore of Valley Mills and George Wideley of this city were witnesses. The last landing was made near Valley Mills. The witnesses were Charles Furnass, George Wideley and Clayton Pierce. Every landing was made without the use of the rip cord.

FOUR ASCENTS IN ONE.

ST. LOUIS, May 23.—John Berry and H. E. Honeywell made a practice ascent for Berry to qualify as pilot, of 2¼ hours, landing about 20 miles away near Bridgeton, Mo. Harry Grover, Constable John Mueller and a "Globe-Democrat" reporter followed the balloon in an automobile. As soon as the balloon landed, Honeywell got out and Grover and the reporter got in for a mile ride. Another landing, and Honeywell and Mueller went up for a short trip. Upon landing again Honeywell took up six boys.

ANOTHER CHRISTENING.

CINCINNATI, May 23.—Piloted by L. B. Haddock, "Jack" Pattison and R. H. Cox, a photographer of the Cincinnati "Enquirer," made their initial ascent to-day in a new balloon, "The Wanderer," at 4.58 p. m. Of course it had to be christened with a bottle of champagne over the bow—no, the anchor in ballooning. The landing was at Nashville, Ind., the next morning, after a 14-hour trip. Self-heating canned supplies were carried, Thermos bottles for coffee, and a tank of water. The highest altitude recorded was 13,000 feet, just before landing.

PITTSFIELD, May 24.—Pilot William Van Sleet took up in the "Massachusetts" Dr. S. S. Stowell, H. J. Greene and D. H. Cullen on a little trip of fifty miles, landing safe and sound at Palmer, Mass., after 2 hours 15 minutes.

WASHINGTON, May 26.—Howard W. Gill left about 3 p. m. on a lone trip in his 22,000 cu. ft. balloon, followed by friends in an automobile. The latter ran out of gasoline at a critical moment after running a hundred miles. All track of the balloon was lost through the inefficiency of the telephone service.

GIRL GOES UP IN A BALLOON.

PITTSFIELD, May 26.—The balloon "Massachusetts," after a trip of 40 miles from here, where it ascended at 2.50 p. m. to-day, landed at 6.12 p. m. on the town line between Amherst and Sunderland. The highest elevation reached was 6,500 feet. The balloon was piloted by Charles J. Glidden, of Boston, who was accompanied by Franklin Playter, of Pittsfield, the latter's thirteen-year-old daughter Phyllis, and Fredk. S. Osgood. This makes 28 trips for Mr. Glidden.

A CHRISTENING AGAIN.

SPRINGFIELD, May 27.—Piloted by A. Leo Stevens, E. M. Stadtler, proprietor of the Stadtler Hotel in Buffalo, Charles R. Culver and Harlan T. Pierpont, of Springfield, made the initial trip in the new Stevens-built balloon "Springfield," purchased by the Springfield Aero Club, after it was duly christened by Mrs. Charles T. Shean, wife of President Shean of the club and Vivien Culver. All during the inflation there was a steady rain, which got very severe after starting on the trip, so that after two hours and ten minutes it was deemed advisable to land at Mt. Greylock, near North Adams, a distance of 46 miles. When the balloon was packed for shipment it was found to weigh several hundred pounds more, on account of the rain, than it did when the balloon was first shipped.

PHILADELPHIA, May 29.—Dr. Geo. H. Simmerman, pilot, Dr. Thos. E. Eldridge, Thomas Rose and Geo. H. Benz, started from here in the "Phila. II," just delivered to the Philadelphia Aeronautical Recreation Society by A. Leo Stevens, landing at Woodbine, N. J., after a 2½ hour trip. Mr. Rose sprained his ankle in landing, and all were haled to a Jersey "jug" for tearing up a potato patch. Such is ballooning life! Distance, about 52 miles.

NORTH ADAMS, May 31.—Dr. R. M. Randall piloted the "North Adams No. 1," with Thos. Ramsdell and C. E. Martin as passengers to Conway, 24 miles. Twelve ascensions have been made from North Adams this year.

SPRINGFIELD, May 31.—A. Leo Stevens piloted Henry E. Marsh, S. S. Plunderson, L. J. Powers and H. T. Pierpont in the "Springfield" in a 3 hour 11 minute trip to Hope, R. I., close to the water of Narragansett Bay, a distance of 61 miles.

PITTSFIELD, June 3.—Piloted by Wm. Van Sleet, William C. Bramhall and Henry Ilsley, the sporting editor of the Boston "Transcript," sailed away in the "Massachusetts" at 10.25 a. m. in the rain, landing in the evening near Westfield.

INDIANAPOLIS, June 5.—Nine balloons start on two contests. See July issue.

PITTSFIELD, June 3.—William Van Sleet, P. W. Page, Miss Lois L. Davidson and W. E. Colby in the "Massachusetts" to Southwick, Mass., after 3 hrs. Dist. 36 m. The three passengers were representatives of as many newspapers.

PITTSFIELD, June 11.—William Van Sleet, A. J. Petroupoulis and Eugene Dessureau in the "Pittsfield" to Colona, N. Y., 4 miles west of Troy. Dist. 32 m.

PHILADELPHIA, June 12.—Dr. Thos. E. Eldridge, A. T. Atherholt, F. B. Cargill, Miss Anna E. Winnicoff and Miss E. Katzmiller in the "Phila. II" to Vincentown, N. J. Dist. 25 m. Dur. 4 hrs.

PITTSFIELD, June 13.—William Van Sleet, W. C. Bramhall and Edgar L. Robbins in the "Mass." to East Alstead, N. H. A previous temporary landing was made at Dummerston, Vt. Dist. 66 m.

PITTSFIELD, June 16.—William Van Sleet, W. H. Gannett, Dr. S. S. Stowell and G. R. Hutchinson in the "Mass." to West Springfield. Dist. 40 m. Dur. 2:33.

FITCHBURG, June 17.—Chas. J. Glidden and J. J. Van Valkenburgh to Burlington, Mass., in the "Boston." Dist. 47 m. Dur. 2 hrs., 10 m.

CANTON, June 17.—Dr. H. W. Thompson, Col. W. S. Ruhl and John Oliver in the "Ohio" to Osnaburg, about 5 m.

MILWAUKEE, June 18.—Maj. H. B. Hersey, Miss Jane Fairweather and John H. Moss, president of the Milwaukee club, in the "Pabst" to Kansasville, Wis., 30 m.; 2 hrs. 3 min.

RUTLAND, Vt., June 18.—In an attempt to balloon to Canada, as was announced in the June issue, William Van Sleet piloted Prof. W. H. Pickering and Jay B. Benton in the "Massachusetts" to Laconia, N. H., about 76 miles away, near Lake Winnipesaukee. This was the first attempt to cross the great mountain ranges of Vermont and New Hampshire. A heavy wind was blowing and the landing was made at this point to forestall the possibility of a descent in one of the big lakes in that district.

DAYTON, O., June 18.—A. Leo Stevens, E. B. Weston, Geo. W. Schroyer and Redmond Cross in the "All America" to Cincinnati, 48 m.

ST. LOUIS, June 20.—John Berry and M. A. Helmann in the "Melba" to Wrights, Ill.

NORTH ADAMS, June 21.—N. H. Arnold, Wm. E. Coffin and T. R. Coffin in the "No. Adams I" to West Richmond, N. H.

DAYTON, O., June 21.—A. Leo Stevens, H. L. Ferneding, John McIntire, R. L. Devoe and Carroll Sprigg in the "All America" to Findlay, O., 86 m.

PITTSFIELD, June 21.—Piloted by Wm. Van Sleet in the "Pittsfield," Mr. and Mrs. R. N. Burnham started at midnight on a balloon honeymoon trip, landing at 4:30 A. M. in Holbrook, a dist. of 122 miles, and only 14 miles from Boston.

ST. LOUIS, June 22.—John Berry and M. A. Helmann in the "Melba" to Rock Hill, near Webster Groves. Dist. 10 m.

CANTON, June 25.—Dr. H. W. Thompson and Geo. F. and Earl Knight in the "Ohio" to Louisville., O., about 7 m.

ST. LOUIS, June 26.—H. E. Honeywell, L. S. Von Phul, M. Schwarz, Lee and Lewis M. Rumsey in the "St. Louis III" to Carlinville; 47 m; dur. 7 hrs.

PITTSFIELD, June 29.—A. H. Forbes, C. B. Harmon, Miss Mabel Herbert Urner and two friends in the "Massachusetts" at midnight, landing at Pomfret, Conn., 8:15 A. M. Dist. 75 miles.

FITCHBURG, June 29.—Chas. J. Glidden and W. B. Clark in the "Boston" to Burrillville, R. I. Dist. 50 miles; dur. 2 hrs., 15 min.

DAYTON, June 29.—The "Hoosier," G. L. Bumbaugh pilot, carried Cyrus Mead, Dr. L. E. Custer and Irvin Kumlos on all-night trip to 6 miles south of Louisville, Ky. Dist. 149 m.

Newspaper Published from Balloon.

DAYTON, June 29.—Capt. G. L. Bumbaugh, pilot; P. M. Crume, G. A. McClennan, Frank C. Carley, Howard Burba, Lucern Custer and B. F. Wendler, in the "Hoosier" 80,000 cu. ft., made a trip to N. Vernon, Ind., about 140 miles. Besides these men, a printing press was carried along, and 18 bags of ballast, landing with two. A small edition of the Dayton "Journal" was edited, type set and printed during the flight. Then, too, a farmer took a shot at the balloon.

PHILADELPHIA, July 3.—Dr. T. E. Eldridge, Dr. E. H. Simmerman, Fred E. Eldridge and Miss Margaret Tourison on a moonlight ascent in the "Phila. II" at 8:09 P. M., to Dennisville, N. J., landing there 3 hours later in a swamp during a heavy wind. Dist. about 50 miles.

ST. CLOUD, France, July 4.—Piloted by M. Melandre, Mr. and Mrs. Cortlandt F. Bishop, D. W. Bishop, Mr. and Mrs. Lloyd, G. Griscom, James Deering and Luigi de Chatillon in the "St. Louis."

SPRINGFIELD, July 5.—Harlan T. Pierpont, Harry Jones, H. W. Waters and T. L. Avery in the "Springfield" to Westford, Ct. Dist. 25 m.; dur, 1:15.

New New England Record

NORTH ADAMS, July 11.—William Van Sleet, E. Dessernult, Frank Smith, Dr. W. B. Sullivan and Charles Gatslick to Topsham, Me. 182 miles.

Five Routes Projected by an Aerial Navigation Company.

The German Aerial Navigation Company, of Frankfort-on-Main, has established the first permanent airship lines in Germany. It is the purpose of the company at the start to connect fully 30 cities. It has already received patents for its turn halls for motor balloons, and it will erect the first halls in Berlin, Munich and Strassburg in Alsace. The extensive plans of the company have aroused the liveliest interest on all sides, and their execution appears to be financially assured.

The first line of connection planned is Munich to Dresden by way of Nuremberg, Plauen and Chemnitz. The second line is from Munich to Cassel by way of Ulm, Stuttgart, Mannheim, Mayence, Coblenz, Cologne, Dusseldorf, Elberfeld and Paderborn. The third line is from Berlin to Lubeck by way of Bremen and Hamburg The fourth line is from Berlin to Konigsberg by way of Stettin and Danzig. The fifth line is from Strassburg to Berlin by way of Metz, Trier, Mayence, Frankfurt, Erfut, Leipzig, Halle and Madgeburg.

POST PRESS BULLETIN.

Official Figures National Race.

The official figures of the National balloon race at Indianapolis, June 5th, have been given out as follows:

Balloon "University City," 377.9 m., dur., 25:35; "New York," 357 m., dur. 35:12; "St. Louis III," 328.5 m., dur. 26:12; "Indiana," disqualified for making intermediate landing; "Hoosier," 233.5 m., dur., 22:10; "Cleveland," 40 m., dur., 2:50.

John Berry has been awarded the long distance cup of the Aero Club of America and A. H. Forbes gets the Fisher cup for duration. Each pilot gets the Club's silver medal and the aides a bronze medal.

No official figures have been given out of the endurance handicap. This contest, in which unlicensed pilots contested, is disclaimed by the Aero Club of America, although the circulars issued before the race stated that it was held under A. C. A. auspices.

Ladies Balloon Fete in Philly.

Dr. Thomas E. Eldridge, president of the Philadelphia Aeronautical Recreation Society, is arranging a ladies' balloon contest for about August 14th at the grounds in Philadelphia. It will be a sort of "balloon fete," with ice cream and other refreshments served on the lawn to the non-contestants as a sort of consolation, though to what degree that part of the affair is a consolatory success will have to be imagined.

Arthur J. Robinson, of Sheridan, Wyo., is building a flying machine to be equipped with a 20 h. p. Curtiss motor. The machine should be ready in another month.

Wright Brothers Celebration.

(Continued from page 43.)

during the evening's fireworks display, the profiles of Wilbur and Orville Wright, wreathed with laurel, blazed out.

THE BALLOON'S COMPLIMENT TO THE AEROPLANE.

Just as General Allen was presenting the medals to the Wrights, the balloon "All America," with Geo. W. Shroyer and E. B. Weston, two prominent citizens of Dayton, and Redmond Cross and Leo Stevens of New York, passed directly over the platform where sat the Wrights and the officials. The day was ideal and just before the start it appeared quite probable that the balloon might pass directly over the fair grounds where the exercises were taking place. And that is what actually happened.

Propeller Mathematics.

(Continued from page 47.)

with barometric and thermometric differences and the velocity with which the air is being handled by the propeller, but also with the speed of the machine, to which the propeller is attached, through the air, its greatest variation being most noticeable in propellers designed for sustentation only, due to the increase in its value caused by the inertia of the air on the intake side of the propeller, and again in the opposite condition, of full flight, decreasing its value. This is true only of propellers revolving at constant speed, different values obtaining again when propeller and motor are so designed as to permit of the rotating speed increasing as the machine containing them acquires velocity up to the full flight maximum.

Foreign Letter (Sweden).

(Continued from page 69.)

machine comprises one or two shuttle-shaped receptacles or pontoons made of balloon cloth with a jacket of aluminum or magnalium, and divided into several compartments. These receptacles are filled with air, which, when compressed, is heated in a ball-shaped, double-walled heater placed in the centre of the pontoon. An isolating substance is placed between the two metal walls of the heater, which is fed from a receptacle with liquid air, and the heating is effected by an apparatus of the Primus system. The warm air from the heater is led into the hull of the pontoon, which for safety's sake may be filled with a number of smaller balloons, the air within which is heated by the hot air let into the pontoon. When the air has attained to a temperature of 60 degrees Cent., the specific weight of the machine will be about the same as that of the atmosphere, and it can consequently just float. An ascent is made by further heating the air, and a descent by letting in cold air. Ascent and descent can also be effected by two vertical air turbines placed in drums right through the pontoons, one on each side of the heater, which turbines, when worked, will make the machine rise, and when reversed make it descend. The airship is propelled by means of one or two horizontal air propellers, placed either under the pontoon or, if there are two pontoons, between them. The motor is a rotary benzine motor, on the turbine principle, and it works both the vertical and the horizontal air propellers. The motor is of a novel and ingenious construction, and has already stood its test and given full satisfaction; it is an essential part of the invention.

Those interested in the new invention claim for it sundry distinct advantages which render it superior to the usual type of airship.

Striving for Perfect Machine

(*Continued from page 58*)

but great caution is required as to where they alight. Those equipped with runners on the outer hand, can alight practically anywhere, but are unable to start again without a special starting apparatus. If, however, we should make a combination of the two systems, a large part of this trouble would be eliminated. The machine would start on its wheels, and when in the air, these would be drawn up out of the way, so that it could alight on the runners. Such a system would make cross country flights much more practical and safe than they are at present.

This machine which we have described we believe to excel all others in regard to stability and economy, easy starting and landing, and in convenience for housing. The first two points have been shown by experiments with a model and the latter seem almost self evident. This type of machine, therefore, apparently fufills the necessary conditions of the perfect flying machine better than any other so far constructed, and should consequently be of more practical value.

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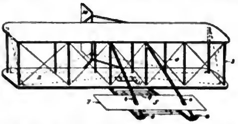

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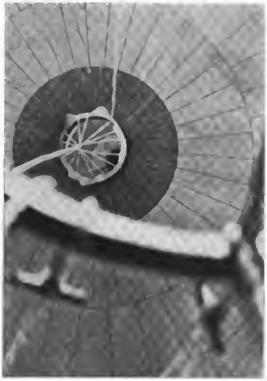

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AERONAUTICS

THE AMERICAN MAGAZINE
OF AERIAL LOCOMOTION

VOL. 5
NO. 3
SEPTEMBER '09
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WATCHING BLERIOT *Edwin Levick Photo*

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The swallow in the flight.
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WANTED—MORE ACTIVITY

The lack of active work on the part of Aero Clubs, the need for prize money to encourage invention and construction, etc., has brought forth the following interesting statement in a letter to AERONAUTICS.

" * * * is president of the * * * aero club. His letter repeats the same old story, and reveals the same condition of things that your good paper has been trying to impress upon the apathetic wealthy ones of your country. Perhaps continual dropping may wear away the stony hearted. Anyway, keep the fight going—the cause is worth it."

Now that public interest is growing, it is certainly time that the clubs desirous of making progress should bend their efforts to encouraging more and more work for the accomplishment of everyday flying.

NOTICE

Owing to lack of space we are forced to omit in this issue the following articles: SELLERS STEP AEROPLANE, ASCENSIONS, ANTHONY WIRELESS DIRIGIBLE and PERFECTING THE HELICOPTER, by Paul Cornu. These will be printed next issue.

HIGH EXPLOSIVES IN AERIAL WARFARE AS A SOURCE OF ENERGY

By Hudson Maxim.

BEFORE we talk about employing high explosives in aerial warfare, and discuss the best and most practical ways and means of killing people and destroying property with them, we want to answer the question whether or not it is desirable to do this thing.

There are three very popular errors regarding modern improvements in war materials, implements and enginery, and these errors are: First, that they render warfare more murderous than it used to be; second, that their production has a brutalizing and uncivilizing influence, and, third, that human nature has changed so much lately that a meek and lowly spirit can replace gunpowder.

Every invention has been forged out of necessity, and there has been no incentive, and there can be no incentive, to invention so strong as the ever-present menace of enemies against property, life and home. The pursuit of happiness and high ideals has never been prosecuted gently and lovingly, but brusquely and strenuously, in boots and spurs.

Standing, as we do, upon the very threshold of aerial navigation, we naturally lean a-tiptoe and peer into the future with a questioning surmise. Will the flying machine soon become a serviceable actuality, and will it ever become broadly utilitarian, or is it likely to prove a

"* * * perfidious bark,
Built in the eclipse, and rigg'd with curses dark,"

whereon hope alone takes flight, or death rides arm-locked with the helmsman?

If there prove a profitable demand for flying machines, we shall unquestionably see achievement run on so fast that the sight of flying machines threading their way across the sky will soon be commonplace.

The naval and military engineer and the strategist look with wide-awake concern upon the advent of the flying machine.

While the French multitude stare wonder-eyed at the exploits of the Wright brothers, and jar the firmament with their loud bravos, the British military over the channel shudder at the French trumpetings and tremble for their sea-walled Jericho. There is in England a heart-quaking realization that the Flying Dutchman may soon become a reality. Hypersensitive British conservatism may indefinitely prevent the construction of the Calais-Dover tunnel; but the Frenchmen cannot be prevented from tunneling the air.

Unquestionably the demand for flying machines as scouting craft in naval and military operations, and for the transportation of raiders to rip up railroads, destroy bridges, cut communications, blow up magazines and levy ransom upon communities and moneyed institutions, is bound to give the industry a very strong support; while the exacting requirements of government specifications will materially serve to develop and perfect aerial craft on safe, conservative and practical lines.

The element of danger in aerial navigation will be no deterrent to the sportsman. On the contrary, it will be an attraction. The element of danger is half the charm to the true sportsman. Men live bigger, broader, better, healthier lives who let the old war spirit still live in strenuous, daring, manly sportsmanship.

The opening up of the sky for practical business travel will come later; but it is bound to come. Then the remote will be made near; and scorning the ground, men will take wing from business to their homes as the birds go. The flying machine industry, by contributing to land values, will grow rapidly under the impulse of reciprocal contribution. There will be on the great skyway no bad roads problem, no laws against scorching and no obnoxious constabulary harassment.

Flying machines will never be able to work wide destruction by dropping explosives from the air. Even large quantities of high explosives dropped from an aerial fleet upon battleships, coast fortifications and in the streets of large cities would not be widely destructive.

There is a widespread popular error about the force and destructiveness of dynamite. An anarchist once tried to blow up London Bridge with a mere handful of dynamite; and another exploded a few handfuls of dynamite in the British House of Parliament, expecting to see that mighty structure brought down in utter ruin and all Britain shaken with terror; but he succeeded in spoiling merely a few flagstones in the hall, breaking a few windows and getting himself in a bad mess.

In order to do much damage, dynamite requires confining. Large high-explosive bombs dropped into the smokestacks of war vessels or close beside them in the water might do some wicked work.

The great field for operations with high explosives carried in airships will be in the raiders' outfit. The coming aerial fleet need not bother about coast fortifications or battleships. They cannot in the least bar the way to aerial invasion, and in war it is never policy to waste effort or ammunition on what does not stand in the way of entering the territory of an enemy.

Owing to the enormous energy pent up in high explosives, they have often been looked to as a promising source of energy for driving motors and engines of different sorts; but there are insurmountable difficulties in the way of their practical employment in explosion engines, owing to the difficulty of feeding them to the engine cylinder and exploding them there, without blowing up the supply reservoir as well.

But these are not the only difficulties and objections. The expense, in any event, would be absolutely prohibitive.

I was once asked as an expert to give an opinion on the practicability of driving an automobile with an engne actuated by fulminate of mercury, exploded in suitable quantities upon the paddles of a sort of Pelton wheel. I pronounced against the system for the following reasons: Fulminate of mercury costs several dollars a pound. It is one of the most sensitive and most dangerous of all explosives. Although very powerful as a shattering agent, it is very local in its action. It has but little expansive or propulsive force, for the reason that the volume of its products of combustion are very small.

I showed the prospective investor that even though the impossible engine could be made to work, it would cost about $10,000 to drive an automobile with it from the Battery to Central Park.

There is one way, however, that an explosive material may be practically employed as a source of energy for actuating a motor.

I have made a material, containing 70 parts by weight of nitroglycerin to 30 parts of guncotton, the guncotton being dissolved and combined with the nitroglycerin, forming a dense, rubbery material. This material I called motorite. The motorite is made in bars, a little over 5 ft. long and about 7 in. in diameter, and they weigh somewhat over 100 pounds.

The rate of combustion of the motorite is perfectly regular under a given pressure, being about a foot per minute under 300 pounds, and each pound of motorite will evaporate somewhat more than two pounds of water, thereby yielding more than three pounds of mixed steam and products of combustion as a motive fluid for driving turbines, for each pound of motorite burned. Starting with the apparatus cold and the water cold, it takes somewhat less than one-tenth of a second to get up steam with the safety valve or escape nozzle blowing off full blast.

The cost of driving an engine with motorite is about $2 per horse-power hour—rather expensive to be sure—and as the energy developed by motorite in a Whitehead torpedo would be about 400 horse power, it would cost at the rate of about $800 an hour to run the torpedo; but as the torpedo is required to run but a few minutes, the actual expense per run is immaterial, costing about a quarter as much as it does to fire a 10-in. gun.

An enthusiastic newspaper reporter who once interviewed me on the subject of my system of driving torpedoes with motorite, after he had returned to his sanctum, concluded, on his own hook, that motorite would be an excellent thing for driving transatlantic liners, and he made me say so in the newspaper next day. As a matter of fact, it would cost about $80,000,000 to drive the Lusitania across the ocean once with motorite at twice her present speed, which the newspaper reporter made me proclaim easy; and it would require four more Lusitanias to carry the fuel.

THE AERIAL BATTLESHIP

In an article in "McClure's" for August under the above title, the authors, Carl Dienstbach and T. R. Macmechen, make some statements which are apparently extravagant. We naturally sought the highest expert opinion on the subject discussed. Mr. HUDSON MAXIM has kindly consented to correct some of the fantastic ideas expressed.

"War becomes wholesale murder," is the heading of one paragraph, which goes on to say that the machine gun can—well, any one knows what a machine gun, oh, what's the use—get "McClure's" for August. [Advg. M'g'r. McClure's: Please get our rates for reading notices.]

August 1, 1909.

To the Editor of Aeronautics,
1777 Broadway,
New York City.

Sir: In response to your request, I give it as my opinion that a more intimate acquaintance with gunnery and the use of high explosives would have enabled the writers of the article, entitled "The Aerial Battleship," in McClure's of August, 1909, to have avoided making some very wrong conclusions.

No doubt the writers intend to be serious and do not wish to sacrifice truth in order to appeal to the imagination. The writers have themselves been ensnared by the fanciful common opinion of the multitude that the advent of the flying machine means the annihilation of armies and the end of wars. Witness the following statement in the first paragraph of the said article:

"In secret trials by the German Government during March, a rapid-firing gun, capable of throwing nearly 60 1.9-inch shells a minute, was fired with entire success from the deck of the Zeppelin I. *This means the end of armies within the next 10 years.*"

Could anything be more absurd?

Such gunfire will in future doubtless become very efficient when a Zeppelin attacks a Zeppelin, but to assume that a Zeppelin by such gunfire could end all armies in the future is the acme of absurdity. Let us assume that an airship of the size and vulnerability of the Zeppelin should approach near enough to a body of troops to make its gunfire effective. What would the troops be doing? Would they lay down their arms, disband and go home, or surrender unconditionally? Or would they shoot back? Looking from the height of a New York skyscraper, one may form something of an idea of the appearance of a body of troops as viewed from an airship. The soldiers would stand practically head-on to the line of fire and would thereby present a very much smaller target than they would standing side-on, as they do in the ordinary line of battle. It would consequently take very many more projectiles to hit an equal number of men. But there is a still more important consideration than this: Whereas in the ordinary firing line a projectile will not only hit one soldier, but will often pass through several men, a very important desideratum of gunfire is that the trajectory shall be as flat as possible and thereby widen the danger zone as much as possible.

In order to bring troops within effective range, an airship must itself necessarily come within range of the troops, and as the troops will be able to provide themselves with much more powerful guns and more destructive projectiles than the airship would be able to carry, it is impossible that the airship could ever become an effective weapon against soldiers in the field. The main function of the airship will, as I have already pointed out in several newspaper and magazine articles, and in several speeches, be confined to scouting and surveying purposes, in conveying bodies of raiders with a raiders' outfit to be landed in an enemy's country to destroy bridges, rip up railroads, burn magazines and storehouses and levy ransom on moneyed institutions and communities. But the fighting, as in the past, will be done mainly on land instead of between the sky and land.

THE FUTURE OF AERONAUTICS

By Lieut.-Col. W. A. Glassford.

IN regard to the future of aeronautics, it may be well to keep in view the fact that airships and flying machines are vastly more suited for use as instruments of reconnoissance in war and for sporting purposes than for any other that we can intelligently conceive of at present. To compare the navigation of the air to that of water, one should bear in mind that water is about a thousand times heavier than air, and that, whatever may be the future development of aerial crafts, their tonnage, or their carrying capacity, under otherwise equal conditions, could not come within a thousandth part of that carried by ships on the sea.

As to their uses for war purposes, it may be remarked that war is carried on at present by means of materials which have much weight. High explosives are things of weight, and their efficiency as instruments of destruction depend very much upon the manner in which they are placed. In war, this material is reckoned by the thousands of tons, and the traces of its effects when used for this purpose usually leave but very little effect upon the landscape. The dropping of a bomb now and then from a balloon might cause a little fright among the inhabitants for a time, especially if they had not yet had the experience of such a bombardment, but the more frequent such necessarily very isolated bombardments take place, the less surprise they will create, until finally their effect upon the popular nerve would not be equal to that of an ordinary thunder-storm.

For sporting purposes, a wide field is opening for aeronautics. Although the future development of aerial crafts will no doubt be much encouraged by governments on account of their possible use for reconnoitering purposes in war, it is to sport that we must look for the greatest support which will be needed in the necessary experiments for the development of aerial navigation.

In times of popular enthusiasm, where so much is written for the purpose of entertaining the public, in the manner in which the unsophisticated public wishes to be entertained, there are so many false notions mixed with quoted scientific truths that have no bearing on the matter, together with the amount of poetry usual on such occasions, that a literature is fast being created which is capable of bewildering not only the masses, but even sometimes people who reason.

MOONLIGHT AND SUMMER SKIES

Margueretta King Tourison.

AT 8 o'clock on the evening of July 3 the balloon "Philadelphia II," recently purchased by the Philadelphia Aeronautical Recreation Society from A. Leo Stevens, cast loose from the U. G. I. athletic grounds at Point Breeze.

It was a perfect night. In the West, great rolls of rose-purple clouds hung over the Schuylkill River, and hundreds of people chatted together on the green lawn and on the porches of the trig little clubhouse.

The balloon rose quickly, carrying its passengers, Dr. George H. Simmerman, Dr. Thomas E. Eldridge, Mr. Fred Eldridge and Miss Margueretta King Tourison.

A good breeze bore the balloon swiftly over the Delaware River, and from the basket the passengers looked out upon the city of Philadelphia, fast disappearing to nowhere. It looked like a great cloud of black velvet, upon which were countless diamonds, set in orderly row.

The tanks at the Point Breeze oil works looked like fat red mushrooms; the battleships lying at League Island like models. Although our eyes failed to see a sign of men, up from the apparently empty decks came the voices of marines, cheering us on.

Then we passed "over on the Jersey side," and the darkening twilight gathered quickly about us. The moon, first blood-red, then gold, finally turned to silver, and in its white glow we saw distinctly the neat Jersey farms mapped out beneath us.

It grew cold, as we reached an altitude of nearly 5,000 ft., but not uncomfortably so. All noise, and dust, and care seemed left below on earth, and we floated, like disembodied spirits, up there in the very heart of the lovely night.

We passed over Pittman, Clayton, Franklinville, Malaga, Vineland, Millville, Manumuskin, and at nearly every place were greeted by shouts of "Good luck!" from the people down among the green and the little lights, thousands of feet below. The voices which came up were most tiny, and Dr. Simmerman, who was familiar with the geography of the place, was the quickest to catch the names.

About 10:15 p. m. a streak of light, before us, yet somewhat to our left, which we had long been wondering about, resolved itself distinctly into moonlight on shimmering waves. Directly beneath us a large farm was sliding by. Beyond that lay a thick black woods.

"Where are we?" called the pilot through his megaphone.

"One mile from the ocean! Better come down!" a voice came back.

So, much against our wishes, the valve rope was pulled and the earth plunged up to meet us.

We stood on the edge of the car, holding on to the hoop above us, and although in our trackless descent we crashed into the top of that forest and went skidding some distance across the meadow, we were none the worse for the speedy scoop earthward.

All being well that ends well, we looked about to see what manner of ending this might be. The forest lay behind us; before us, a few hundred feet, the masts of small sail boats rose against the night sky; and all about us, between tufts of grass, the moon glowed in the pools of odorous water.

However, nobody seemed to feel the least bit peevish about it, and while Dr. Eldridge put away the instruments, his brother started out to explore.

Thinking we had come due south, he started north, guided by the stars. He soon came to deep water, and with ample proof about his clothing, he returned to the basket. Dr. Eldridge then went with him, only to fall in up to his neck.

By this time a stiff breeze was tossing the balloon about at a most uncomfortable rate, and mosquitoes were glutting themselves on our blood.

Finally the welcome voice of Mr. Sutton was heard from the south, and after a time he and the Eldridges managed to come together. Mr. Sutton said we were in Robin's Swamp, two miles from Eldora, Cape May County, New Jersey.

Now we all set to work, squashing round up to our knees, to unfasten the bag and let out the gas. It was a merry chase, for that gay-minded bag, assisted by the wind, hopped us around that marsh at a lively pace.

At last, however, Dr. Simmerman ripped its neck off, and presently it lay, quite a distance from the basket, prone on the plain. Then Mr. Sutton guided us through the gluey ooze and water to his home.

There he hitched up a horse, and merrily, though with teeth chattering from the cold, we drove more than six miles to Woodbine, where, in a restful paradise, lies the Baron de Hirsch School of Agriculture, and here, in the persons of Mr. Henry Geller, superintendent, and Miss Lydia Cantor, matron, reside two of the most hospitable spirits of earth.

As has been mentioned before in Aeronautics, the "Philadelphia II" landed once before in the grounds of this institution, and its occupants were most enjoyably entertained.

This time it was 3 a. m. when we let out a war whoop under their windows, but none the less they roused out of their sleep, made us hot drinks, got extra covers and bundled

(Continued on page 119)

THE CURTISS AEROPLANE

By Harold H. Brown.

PERHAPS the first characteristic of the Curtiss aeroplane that strikes an observer is the finished appearance of all parts; and when it comes to an examination of the motor, the lack of "freak" features.

In the motor, lightness has been secured by the elimination of unnecessary parts rather than by lightening of all parts. The rocker arm actuating both inlet and exhaust valves is now a comparatively common form in good practice, being used on such cars as the Pope-Hartford, De Luxe and other well-known types. In fact, if it were not for the absence of exhaust piping the motor when placed alone would appear not very different from any well finished automobile motor. The oiling system, too, is very well worked out, being practically the same as is used on the Pierce Arrow and Napier cars. Using a square A-Z radiator, similar to that used on automobiles, is somewhat of a novelty. Wind resistance, however, is minimized by placing it behind the operator. The setting of the angle of the planes with the wheels on level ground is slightly upward so that the machine will automatically tend to rise when the proper speed has been attained.

In many machines the propeller is placed to revolve in undisturbed air, as, for instance, in the Wright machine, the only obstruction to the flow of air to the propellers being the struts and wires in front of them. In the Curtiss machine the propeller is apparently shielded by the motor, the radiator and the body of the operator. However, Sir Hiram Maxim in his treatise "Artificial and Natural Flight" claims that under running conditions this actually increases the efficiency of a propeller. Owing to the suction produced, the air directly in the rear of these resisting parts moving with the machine gives the propeller increased thrust. In fact, it has been claimed in marine work that screws under conditions of this sort have been known to actually have negative slip.

The use of the rear horizontal tail is pretty well discussed by the Aerial Experiment Association, the discussion having been recorded in "Aeronautics." It is probable that this tail has a dampening action on any sudden changes in vertical direction, thus adding to the longitudinal stability of the machine.

The methods of control conform rather to European ideas than to those of the Wright Brothers. The pushing inward and outward on the steering wheel steers up and down; turning the wheel left or right, steering as in an automobile. The correcting of lateral tipping by means of the braces around the shoulders is as natural a movement as in turning a corner on a bicycle. This would seem to be a desirable feature, in that many of the movements may be now considered reflex to the majority of people who have driven an automobile or ridden a bicycle; and readily become so to almost anybody with a little practice.

Unlike the Wright machine, the speed of the motor is under the control of the operator. A small pedal operated with the left foot closes the throttle, which is normally wide open. Again, the pedal which operates the brake on the front wheel, and which is worked by the right foot, short circuits the magneto and stopping the motor as a landing is to be made.

The front wheel of the chassis is immovable. This has the advantage of added strength but in landing it might be desirable to make a turn while running on the ground to avoid small obstructions. In this case a steerable wheel would come into play nicely, as in the machines of the Aerial Experiment Association. Then, too, the machine could be steered along a circular track in making preliminary trials and in tuning up. The brake on the front wheel might be placed to better advantage on the two rear wheels of the chassis. Greater braking surface would then be had. This change could be easily made. In landing, as Curtiss does, the rear wheels strike the ground first and the brakes could begin to work immediately.

In a test of the propellers made at Morris Park, a net pull of 160 pounds was obtained, though an aluminum propeller, a duplicate, is said to have delivered to 225 pounds. On the same occasion A. M. Herring tried one of his 4 narrow-bladed propellers, of about 5 ft. diameter, which gave but 115 pounds.

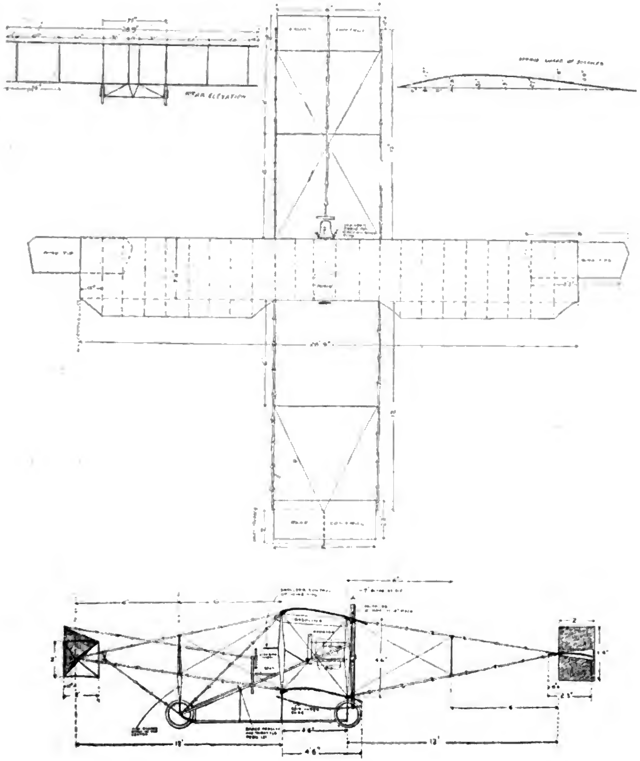
The center of gravity of the machine is apparently 3 in. back from the front of the lower plane.

SPECIFICATIONS.

Main Planes—28 ft. 9 in., by 4 ft. 6 in., 4 ft. 6 in. apart, covered with Baldwin rubber-silk material. Total area of both planes 258 sq. ft. Ribs (22) spruce and ash, laminated, spaced 15 in. apart. Angle of incident measures 4 deg. 14 min., on the ground, though it has been stated as 7 deg. on the ground; flying at 4½ to 5 deg.

Front Control—Double surface, 2 ft. by 6 ft. each, or 24 sq. ft. total. Pivoted horizontally 10 in. back from front edge.

Rear Control—Single horizontal and single



The Curtiss Aeroplane

vertical surface. The horizontal surface is 2 ft. 3 in. by 6 ft.; the vertical rudder, 2 ft. by 3 ft. 4 in. The horizontal rudder is pivoted 8 in. back from front edge.

Wing Tips—These measure 6 ft. wide in front and 5 ft. 5 in. wide at the back. The depth is 2 ft. Operated by cables from a brace around the shoulders of the operator. Hinged at the center of the front on the outermost vertical strut and steadied by the guy wires of the next panel toward the center going through a ring fastened to the corner of the tip at the point where the guy wires cross themselves.

Motor—Four cylinder vertical, water cooled by force pump, 3¾ in. bore by 4 in. stroke. Cylinders cast iron with homogeneously welded copper jackets. Lubrication by force feed system, pump being built in the case and

(*Continued on page 120*)

CONSTRUCTION AIDS.—IV.*

CLEVE Thos. Shaffer suggests the following idea for a landing skid or "shock absorber" on an aeroplane:

The accompanying diagram (Fig. 1) will give an idea of how to construct an efficient and easily made arrangement by merely lengthening the front struts a few inches, the use of a couple of ordinary door springs, an extra bolt and a saw.

If the struts are very light, it is advisable to double them, putting one on either side of the end horizontal cross pieces, and passing the lower bolt or pivot through bolt uprights on either side of curved skid.

Should the springs "give" their whole length, the curved piece forms a good skid, the head being curved well out of contact with the ground.

A is the skid, B the doubled spring, C a screw, D a brace, EE the main beams, F a rib, GG upright struts, H guy wires, I end cross piece, and J a pivot bolt.

In Fig. 2 is shown a combination of wheel and skid. The wheel touches the ground first, springs upward, and allows the skid to come in contact.

A guy wire tightener on sale in France is illustrated in Fig. 3.

Dr. William Greene, who is building at Morris Park, uses the device shown in Fig. 4. A piece of metal of the shape shown is placed between the end of the vertical strut and the main beams. SS are regular bicycle spokes run through the holes in the metal piece and held at the extremities by the heads of the spokes. W is a cross-section of a vertical strut. The manner of connecting the strut to the beam was shown in the August issue.

In Fig. 5 is shown a new patented device of Bleriot. The wheels AA are mounted on rods B pivoted to verticals C. Another stayrod is D, which works against the coiled springs F. The wheels are joined by the pivoted axle G and spring guy wires H. The curve and construction of the Antoinette wings are shown in Fig. 6.

Spruce has been found most valuable of the woods in aeroplane and airship construction, but one must have what is known as "clear" spruce. Ash is good where flexibility is required. In the Curtiss machine the ribs are of spruce and ash, laminated.

Curvature of the planes is a matter for individual experiment. Several works, however, will give valuable data on head resistance and efficiency. Short Brothers, London, who are building some Wright machines, suggest in "Flight" the use of a curve shown in Fig. 7, with the angle of incident as illustrated.

In designing the supporting surfaces, of course, a single surface is the simpler, as it requires but a single layer of cloth placed on the under side of the ribs. The ribs, however, must be covered with fabric forming a "pocket" for the rib. In the double system a neater entrance is accomplished by the ribs being on each side of the main beam.

Water and airproof fabric is most in use for the covering of the planes, and this may now be obtained from several manufacturers in all weights.

In Fig. 8 is illustrated the Curtiss system of joining struts and beams. The tube B is split at the bottom, shaped and brazed to the metal sleeve. AA shows how the sleeve is cut and bent up so as to allow the guy-wire to be fastened.

A recent invention by a St. Louisan is a safety device for testing aeroplanes and training aviators. The inventor claims it will place on an absolutely safe basis all aeroplane tests and trial flights, and that all danger while training aviators, army officers and others who wish to acquire the art of flying will be eliminated. A company has been organized to promote the invention and to give exhibitions, train aviators and sublet privileges in different cties and sections of the country. The first exhibitions are promised to be given in St. Louis this fall during the centennial celebrations. After thorough tests and continued practice, such aviators as desire will cut loose and make flights without the safety device in the attempt to establish new records.

The device consists of a captive balloon, held by three wires or cables. The balloon is sent up 3,000 or 4,000 ft. high, and will have the usual basket in which a man operates a brake. Suspended from the basket is a strong thin wire, at the end of which is fastened the aeroplane or airship to be operated. This wire is amply strong to sustain the weight of the aeroplane, motor and the operator seated therein. Underneath the basket of the balloon, high in the air, is a pulley, over which the wire passes, and to the end of which is fastened a weight equal to the weight of the wire supporting the airship. As the airship rises, this weight, operating like a trolley on one of the cables holding the balloon captive, takes up the slack and holds the wire taut, thereby preventing entanglement or mishap.

Assume the airship is sailing around serenely 100 ft. from the ground and the motor gives out, or the propeller breaks, or the aeronaut loses control. Instead of being dashed to the earth, machine and all, the man seated in the basket of the balloon applies the brake, and the descent is gradual and harmless.

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*Previous instalments in the April, June and August numbers.

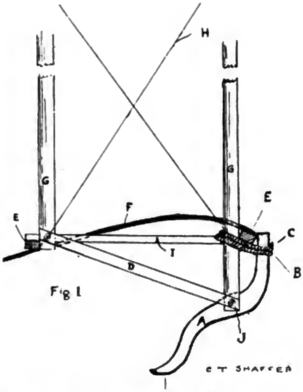


Fig 1

E T SHAFFER

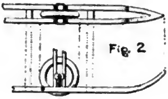


Fig. 2

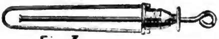


Fig. 3.

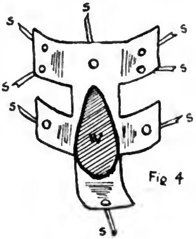


Fig 4

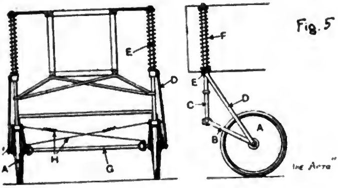
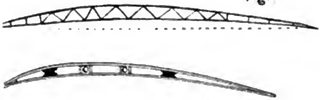


Fig. 5

"The Aero"

Fig. 6



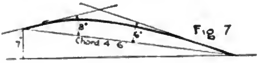


Fig 7

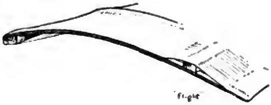
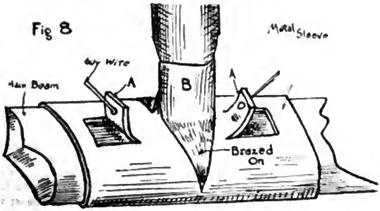
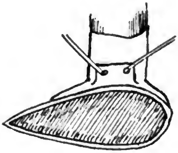

"Flight"

Fig 8



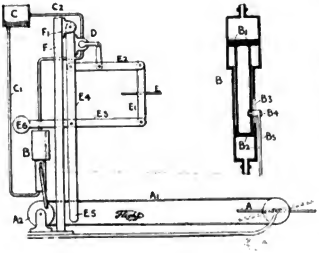


WRIGHTS' AUTOMATIC STABILITY

TO arrive at the obtaining of control by mechanical means instead of by the quickness and ability of the aviator, has been worked on by many.

The Wright Brothers have applied for a patent in England covering a device of this nature which is described in our esteemed contemporary, *Flight*, as follows:

"Using compressed air, or other fluid pressure, as power, the action of the contrivance is controlled in one case by a pivoted vane acting under the influence of the wind; in the other case, by a pendulum. In both cases the controller is merely used to operate a three-way valve; its influence upon the manipulation of the steering gear or front control, as the case may be, essentially takes place through the agency of the relay mechanism which the opening of the valve brings into action.



"This relay mechanism consists of a kind of compressed-air engine which is linked up to the steering-gear or front control, as the case may be, by means of a connecting-rod. The engine itself is operated by a compressed-air reservoir, which would presumably be kept charged by an engine-driven pump.

"Regarding the compressed-air system as the principle, the patent covers two separate main and distinct applications of it to the same flyer. One of these systems is exclusively devoted to the automatic control of the elevator (i.e., front horizontal control), the other is likewise reserved solely for the manipulation of the rudder and for warping the main planes. Each of these systems has its own reservoir, engine, and controller, the latter apparatus being, as already mentioned, a pivoted vane in the case of the elevator-gear, and a pendulum in the other instance.

"As illustrating the mechanical arrangement of the apparatus, we give a drawing showing how it is supposed to be applied, according to the patent, to the operation of the elevator, which is shown at A as a pivoted flat plate, controlled by a rope, A^1, from a drum or pulley, A^2.

"This pulley is a member normally under the control of the driver through the agency of a lever, but embodies such features in its construction as enable it to be coupled up at will through some form of clutch to the connecting-rod of the compressed-air engine, B, which is operated from the reservoir, C, to which it is connected by the pipes, C^1, C^2. Of these the former is in permanent communication with the lower end of the cylinder, while the latter leads to the upper end through a three-way valve, D, which is operated by the automatic movements of a horizontal vane or aeroplane, E, mounted on an arrangement of beams, E^1, E^2, E^3, forming a parallel motion mechanism.

"The frame, E^4, on which the beams themselves are pivoted, hangs from brackets, F^1, mounted on an adjacent pair of the main struts, F, of the flyer, and one of its members is prolonged downwards to form a handle, E^5, within reach of the pilot.

"The object of this arrangement is that the pilot may himself at any time reset the course or, as it may perhaps be better described, the neutral line, which means to say that if, after having flown along a horizontal course, he wishes to ascend, the automatic mechanism may still be retained in action to govern the machine against variations from its ascending path by merely re-setting the position of the frame, E^4. Since the valve, D, is itself mounted on the frame, E^4, and because the beams, E^1, E^2, E^3, are independently in equilibrium as a whole by virtue of a balance-weight, E^6, it will be evident that any alteration in the position of the frame, E^4, will at once affect the state of the valve, D, that is to say, it may tend to close it if it was open or *vice versa*. Thus, supposing that the exact connections are such that the valve being open, the elevator gets tilted for ascent, then, should the pilot wish to ascend permanently, he will move the handle, E^5, so as to open the valve a little way. This will have no effect directly upon the position of the controlling vane, E, because the balance-weight, E^6, serves to keep that horizontal irrespective of the position of the frame, E^4. The change from the horizontal to an ascending flight-path, however, will automatically result in a change of the real attitude of the vane, E, to the relative wind, which will now appear to the vane to blow from above, and will thus cause it, when the wind is strong enough, to fall a little and thereby close the valve, D. This action would bring the relay mechanism into action, and so alter the angle of the elevator, until the conditions are restored which allow the controlling vane, E, to return to its neutral position. Naturally the vane and its balance-weight are not dead beat, and consequently, if disturbed, oscillations are set up which require time to die out, and it is thus more than likely that the normal state of affairs would be one in which the vane is constantly jogging up and down.

LATERAL STABILITY.

"For regulating lateral stability a pendulum is used instead of a vane, the pendulum being suitably coupled to the valve, so that any canting of the flyer from its normal level causes the valve to be opened or shut according to requirements. The pendulum hangs straight down like a plumb-bob, under the influence of gravity, and it is thus really the movements of the machine as a whole about the pendulum as a fixed point which forms the control. In practice the normal state of the pendulum control would presumably be one of more or less continuous, although possibly slight, oscillation. In the same way that it is possible with the vane control to alter the neutral line, so can the same variation be accomplished with the pendulum, and if necessary the flyer be made to travel on a circular path indefinitely.

"The patent No. is 2913 of 1909."

In sailing for Europe, Orville Wright stated to the newspaper men: "Among other things we have been working upon several devices to obtain automatic stability. We realize that if we can make the aeroplane balance automatically in the air while in flight it will be a very important step forward. It may be possible that I will try some of the devices in Germany. At any rate I think we will both demonstrate the devices when I get back, if I manage to come back perfectly safe and sound.

"The device which the English have been making so much bother about is an old contrivance with which we planned to get automatic stability so far as five or six years ago. That was before anybody believed that even flying, as we have it to-day, was possible. Since then we have progressed beyond these devices. We have others which may be great improvements.

"The vane and pendulum compressed-air device is very simple. It can be adjusted to any machine in a very few minutes and theoretically works out very well. I may try it abroad. We have used it before, but I do not think that we have ever used it in connection with any big flights."

FLYERS ASSURED FOR ST. LOUIS

Five dirigible entries and one aeroplane are assured the contest committee of the Aero Club of St. Louis, in charge of the aerial carnival to be held at St. Louis, October 4 to 9. The committee expects to receive other entries, and is making a special effort, with prospects of success, to have one of the Wright flyers in the aeroplane competition, and possibly Glenn H. Curtiss, who by that time will have returned from abroad.

Besides the regular dirigible contest for two prizes of $1,000 and $500 each, a three-cornered race has been arranged between Roy A. Knabenshue, Lincoln Beachey and Capt. Thomas S. Baldwin. All three have declared their intention to participate. W. J. Smith of St. Louis is getting his dirigible, "East St. Louis," into commission again to practice for the contest in which he is entered. John A. Riggs, of Hot Springs, Ark., has entered a new dirigible, which he claims to be the largest in America, the "American Eagle." He states that he will endeavor to sail his craft from Hot Springs to St. Louis before the air carnival takes place.

H. A. Robinson, the only St. Louisan with bright prospects for speedy aeroplane success, has entered his monoplane, just assembled. The apparatus is so similar to a Bleriot 'plane that it would be hard to tell the difference in small photographs. Mr. Robinson spent some time abroad last year studying European practice, and has made a number of successful flying models. He will try out his craft on a five-acre farm about 40 miles from St. Louis during September.

Pittsburgh is to have an aero carnival in October, and it is promised to be the largest held in this country.

Mr. S. Andrews of New Durham, N. J., has built a gliding machine and tried it out "with perfect success." It contains 169 sq. ft. of lifting surface, monoplane type, weighing 30 pounds. The spread is 22 ft. 2 in.

ORVILLE WRIGHT MAKES NEW TWO-MAN RECORD.

Army Dirigible Damaged.

THE Wright Brothers completed the assembling and adjusting of their aeroplane at Ft. Myer, Virginia, on June 28. Since then Orville Wright has made 23 flights, varying in length of time from 15 seconds to 1 hour, 12 minutes, and 40 seconds. These preliminary flights were for the purpose of tuning up the machine preparatory to the official trials.

On July 27 at 5:36 p. m. the first of the official trials of the Wright aeroplane was made before the Aeronautical Board of the Signal Corps appointed by the Chief Signal Officer of the Army to observe these trials.

1 HOUR, 12 MINUTES.

On this day Orville Wright, with Lieutenant F. P. Lahm, Signal Corps, as a passenger, made the world record flight of 1 hour, 12 minutes, and 40 seconds. He thus fulfilled the endurance test which calls for a flight of one hour with a passenger during which time the flying machine must remain continuously in the air without landing and return to the starting point and land without any damage that would prevent it immediately starting upon another flight.

The speed trial was to have taken place on July 28, but the weather conditions being unfavorable it was postponed. The Wright Brothers were then granted an extension of three days in which to complete this trial.

On July 30 was successfully made the second of the two official test flights, the 10-mile cross-country trip.

The course was five miles each way from Ft. Myer to Shuter's Hill, near Alexandria, Va. Lieut. B. D. Foulois was the passenger on this occasion. The elapsed time of the flight was 14 minutes, 40 seconds, but the official time is regarded as less than this as the turn around the balloon at Shuter's Hill is deducted.

RESULTS OF SPEED TEST.

Speed from Ft. Myer to Alexandria end of the course, 37.735 miles per hour; speed from Alexandria end to Ft. Myer, 47.431 miles per hour; average speed, 42.583 miles.

The contract price for the machine, at a speed of 40 miles, was $25,000, with a bonus of 10 per cent. for each additional mile per hour. Thus, the Brothers Wright received the sum of $30,000 for "just a few sticks, a motor and some canvas."

CONDITIONS OF CONTRACT.

On Dec. 23, 1907, the Chief Signal Officer invited bids from the public for a gasless flyer capable of meeting the following requirements:

Bidders must submit drawings and statements of speed, weight, surface, motive power, etc., and the machine must be capable of being assembled and put in operating condition in about an hour. The machine must be able to carry two persons of a combined weight of 350 pounds and sufficient fuel for a flight of 125 miles and have a speed of 40 miles in still air. An endurance flight of an hour must be made, returning to start without any damage which would prevent immediately starting upon another flight, and make a speed showing of more than five miles against and with the wind. (See Jan. 1908 "Aeronautics" for full details.)

The machine has not, however, been definitely turned over to the Signal Corps, as the part of the contract calling for the instruction of two persons in its operation has not yet been completed.

On one occasion, the day before the official duration flight, the aeroplane was started without using the weight, though it was used in both the official trials.

THE CROSS-COUNTRY FLIGHT.

It is a rough bit of country for falling purposes between Fort Myer and Alexandria; largely covered with half grown oak trees and little of it cultivated, roads few and far between and houses not frequent. The same thought, unexpressed, was in the minds of all who waited. What if the engine gave out or the complicated machinery balked at some point or other? The flyer would likely enough be forced to descend amid tree tops or on rough slopes. After the machine got out of sight on its outward trip the minutes seemed to pass slowly.

Suddenly a boy yelled out at the top of his lungs: "There she is!" Every one looked, straining his eyes, though every one was not as keen-sighted as the boy. But in another minute everyone could see—so rapidly were they coming. There was the flyer, headed

Wright Just Leaving The Rail *Photo by H. H. Brown*

home, going as fast as a locomotive straight through the air and, for the moment, as steadily as an old gray horse.

The steadiness, however, was rather an illusion. For suddenly the watchers had the shock of the day. Down, quickly and unexpectedly, went the aeroplane. It was now less than two miles away, perhaps hardly over a mile. But it sank and was seemingly covered over by the waste of tree tops, just as a small boat in wild water sometimes seems to be covered over by the waves.

To the general relief, the flyer reappeared just as the little boat usually does. It had been submerged for perhaps half a minute. Now it was seen, flying low, and climbing, climbing to get back to a comfortable altitude in the air. There was a confused murmur, a sort of expression of relief, in crowd-language.

What had happened? It was explained later. There is a deepish valley, just south of the gradual hill that reaches its top at Fort Myer. The wind as it had been blowing curved down into the bowl of the little valley, following the conformation of its bottom, and so was caused a downward air current. The machine rode downhill in the air, as certainly as if it had been an automobile down below with a defective brake. Fortunately there had to be a rising air current mounting the opposite slope. By its help and with hard climbing the flyer won its way steadily up to the finishing point.

"I feel sure," said Orville Wright, "that had I continued at the same height at which I crossed the half way hill, or continued climbing instead of gradually descending, I would have gained at least two miles an hour in my speed average.

"I turned Shuter Hill too close to the ground and this compelled me to climb up again to clear the higher ridge between Alexandria and Fort Myer. This used up power which might better have been employed for propulsion."

UP 450 TO 500 FEET.

Mr. Wright was asked the greatest altitude he attained and replied that over the hill at Four Mile Run he had sailed at a height of 450 or 500 ft.

Wilbur Wright to Instruct Army Officers.

Washington, D. C., August 4.—The flights for training the officers of the Signal Corps, Lieutenants Lahm and Foulois, will probably be made at College Park, Md., about 10 miles from Washington. Wilbur Wright will be the instructor and Orville will stop by here for a day or two before he sails for Germany. A field is to be leased by the Signal Corps at College Park as a training grounds. It is much larger than the Fort Myer aerodrome, and contains 160 acres of ground.

Storm Damages Dirigible.

The new 540 cubic metre balloon ordered by the Signal Corps in May has been delivered at Fort Myer, Virginia. This balloon is to replace Signal Corps Balloon No. 12, which was destroyed in an ascension from Fort Omaha, Neb., May 12, 1909.

Ten gas cylinders have been delivered at Fort Omaha, Neb., for use in making shipments of hydrogen in connection with aeronautical work.

Lieutenants Bamberger, Winter and Dickinson and 12 men of the aeronautical detachment, with Dirigible No. 1, reported at Toledo, O., for the military tournament held there during the week beginning July 5. On the evening of July 2 a storm broke over the camp, which caused the balloon tent to collapse and damaged the dirigible to such an extent that no flights were possible during the tournament. The dirigible and equipment, also the officers in charge and aeronautical detachment, were ordered back to Fort Omaha, Neb., at the close of the tournament. The dirigible is now being repaired at that post.

Herring Contract Now Cancelled.

The contract with A. M. Herring was, on his request, extended to August 1 and then cancelled, although Herring desired more time. The reason assigned for the refusal to grant more time was that the money from which the aeroplane was to be paid for belongs to the Board of Ordnance and Fortifications, which has an annual appropriation for experimental purposes, and set aside about $50,000 for the Signal Corps aeronautical plans. The bond was not forfeited, the government having sustained no financial loss through his failure to carry out his contract.

General Allen is planning to issue new specifications for a heavier-than-air machine later in the year. The new specifications are to be based on the results of the various aero events throughout the world during the summer and fall.

Orville Wright Off For Europe.

New York, Aug. 10.—Orville Wright sailed this morning on the Kronprincessin Cecilie. He will stop in England a short while. While there he expects to run down for brief visits to Shell Beach, where Short Bros. are building six Wright machines.

From England he will go to Germany, where he will make some flights under the auspices of the "Lokal Anzeiger," a leading German paper. Other flights will be made under the auspices of the company which has bought the Wright rights in Germany.

When asked about this company, Mr. Wright said: "This company is capitalized at $150,000 in American money, and at its head is Capt. von Kehler, formerly of the German Army. We have sold our patent rights in Germany to this concern, and hold some stock in it ourselves. There are a great number of scientific and financial men interested in the company, and not a few are friends of the Kaiser, although I do not know whether he is directly interested in it himself."

It was suggested that some rash individual had declared lately that the Wright Brothers would have to take a back seat in flying in the future in view of the recent successes abroad. Mr. Wright merely smiled and said:

"We consider that our machine is the best in the world. We have reached the stage where we are not trying for record flights any more, but what we are constantly striving for is to make our aeroplane of practical use to the general public.

"This can only be done by increasing the fuel supply and making the engines as reliable as the steam engine so that after once starting it it will not stop until the operator desires to cease flying. At the present time we can carry enough fuel to support one man in the air for 25 hours, or if traveling at the rate of 40 miles an hour enough to carry him a distance of 1,000 miles.

"I am sure that we hold the record for speed at the present time. According to official figures abroad the best speed in an aeroplane has been 38 miles an hour over a marked course, while at Washington recently we made against time a record of 50 miles an hour on the level with a diagonal wind and 42½ miles an hour across country. The reason that we can do this is because our surfaces are arranged so as to give the highest possible efficiency. However, I shall attempt no record flights abroad or speed tests, as we have gotten beyond that, and desire now to fulfill our contracts and aim for reliability and durability."

"As to monoplanes," he went on, "they undoubtedly increase the speed by reducing the surface, but they lose much more in other respects. And let me tell you this: There never was a machine that would rise from the ground abroad until our plans became known abroad. All the monoplanes which have made successful flights abroad in recent years have been practically built upon the original Wright plans filed in Europe about 1903."

AEROPLANE RECORDS

World's Duration Record.—Roger Sommers, August, 1909, at Mourmelon-le-Grand, 2 hrs. 27 mins.

World's Two-Man Duration Record.—Orville Wright, Ft. Myer, July 27, 1909, 1 hr. 12 mins., with Lieut. Benj. D. Foulois.

World's Passenger Record.—Louis Bleriot on June 12, 1909, carried Andre Fournier and Santos Dumont in the "Bleriot XII."

First English Channel Crossing.—Louis Bleriot on July 25, 1909, in the "Bleriot XI," from Calais to Dover, 31 miles in 40 minutes.

World's Height Record.—M. Paulhan, on July 18, 1909, in a Voisin biplane flew to 394 ft. at Anvours, France.

World's Duration Record for Monoplane.—Hubert Latham on June 5, 1909, in the "Antoinette IV," 1 hr. 7 mins.

World's Longest Cross-Country Flight.—Louis Bleriot, on July 13, 1909, from Etampes (France) to Artenay, 41.2 kiloms., in 44 mins. in the "Bleriot XI."

TALKS WITH INVENTORS—II.

By F. O. Andreae.

PATENT ATTY.

WHILE the specifications of an application for patent may affect the scope of the claims, and even the validity of the grant itself, the claims as finally allowed by the Patent Office form the backbone of the patent, figuratively speaking.

In describing an invention many things must be considered. For one thing, the description should not be longer than necessary. It must set forth the precise invention for which a patent is solicited, and explain the principle thereof, and the best mode in which the applicant has contemplated applying that principle, in such a manner as to distinguish it from other inventions. In case of a mere improvement, the specification must particularly point out the parts to which the improvement relate, and must in explicit language distinguish between what is old and what is claimed as new. The subject matter should be confined to the specific improvement and such parts as necessarily co-operate with it. The invention should be so described that the courts, in case of a contest, are able to properly construe the claims. Most patents of importance sooner or later are "thrashed out" in the courts. It is there where the final test as to the exact rights of an inventor takes place. The mere fact that an invention is patented, comparatively speaking, is of no more consequence than *"the right to defend yourself"* as compared with *"winning the fight."* Of course, so long as your patent is not challenged, you possess the sole rights as granted on the face of your patent. If your invention is of little or no value, no one will interfere with these privileges, but as soon as the value of your device becomes known, you might just as well make up your mind that the hour of battle is at hand. It is then that the strong patent comes to the front. The cost of obtaining the patent grant is a mere trifle as compared with the cost of litigation in the courts, which may involve thousands of dollars. The omission of a single word in a claim, the placing of a comma may decide a suit one way or the other, but fundamentally it will be each claim considered separately that will either stand or fall before the onslaught of the enemy's legal talent.

A well prepared specification makes it much easier for the examiner to distinguish what is new from what is old, and thereby makes it much easier to obtain a good patent. Two or more independent inventions cannot be claimed in one application, but where several distinct inventions are dependent upon each other and mutually contribute to produce a single result they may be claimed in one application. A reservation for a future application of subject matter disclosed but not claimed in a pending application, but which subject matter might be claimed therein, is not permitted. It is not unusual for two things to look alike, and still be essentially different in the results obtained. A very little change apparently often results in a most valuable invention.

"It is these niceties and distinctions that test the ability of the attorney, and determine whether a valuable invention is to be well, or poorly protected, or entirely lost to the inventor." These are the exact words of one of our leading patent attorneys, and no words were ever more true. A patent may have but one claim, and still be of greater strength and value than a patent ending with fifty claims. It is not the number or length of the claims that count. It is their scope which is of importance and the shorter and more concise and exact in its terms, due consideration being given to fullness and clearness, the stronger a claim is apt to be. Broad claims may, and usually do, cover different constructions, but it is well to also fortify a patent with claims of less scope, because should the broad claims be declared invalid by reason of anticipation or for some other reasons, the lesser claims might still give proper protection. These statements are sufficient for the wise to realize that there is more to the practice of a *good* patent attorney than there appears on the face of it. To cover the subject of patents in the way it should be presented in order to give the layman a clear idea of its field, would take considerable space and fill quite a volume.

"As soon as the application is filed in the Patent Office, the applicant is protected against the grant, without his knowledge, of a patent for the same thing to another person," writes one of our New York attorneys, and while this statement is not absolutely true, still it may be found to work out in that way. To obtain an allowance of claims usually takes several months. The attorney is called upon to meet objections and references cited by the Examiner in charge of the division to which an application has been sent. The nature of the objection often depends on the care with which the application has been prepared. An amendment to the claims is usually necessary, and much care and skill and argument are required on part of the attorney to secure to the inventor all the rights to which he is entitled. In one of the guides to inventors, a firm of Patent Attorneys use this language: "The attorney's argument may raise new objections on the part of the Examiner, and sometimes new references to patents are found which have to again be met by the attorney. This is repeated until the attorney secures everything his client is entitled to, and he should not stop until this is accomplished, and when there is no further objection the application is allowed." I use their statement, because it cites not my own individual opinion, but the wisdom of years of experience, to which I can only acquiesce.

Certain applications have preference over all other new cases at every period of their examination. Applications wherein the inventions are deemed of peculiar importance to some branch of the public service and applications which appear to interfere with other applications previously considered and found to be allowable, or which it is demanded shall be placed in interference with an unexpired patent or patents. In every case, the attorney should keep in close touch with his client, and frequently consult him as to the best means to conserve his interests.

A model is not required and not permitted except in rare instances of complicated machinery, and then must meet very rigid rules as to size and construction.

It would be quite useless for me to go into details of permissable amendments and the subject of interferences, or appeals, as the space allotted to me is limited, but I might say that changes in the drawings or specifications, and all additions thereto, must conform to at least one of them as it was at the time of the filing of the application. In other words, additional points of invention or changes in the invention itself, cannot be injected into cases that have been filed. A new application is required in such cases. All amendments correcting inaccuracies of description are allowed. In every amendment the exact word or words to be stricken out or inserted in the application must be specified and the precise point indicated where the erasure or insertion is to be made. All such amendments must be on sheets of paper separate from the papers previously filed, and written on but one side of the paper. Amendments will not be permitted after the notice of allowance. The Commissioner of Patents cannot recall a patent once issued. Sometimes, however, it happens that two applicants are claiming substantially the same invention. As two patents cannot be granted on two co-pending applications for the same invention, it is necessary to determine who is the prior inventor. This is done by what is known as intereference procedures. The claims of the application must have been found patentable before the interference is declared. "There are so many intricacies and questions to be considered in such a proceeding that it should not be undertaken by anyone not thoroughly familiar with Patent Office practice and the taking of testimony." Appeals from decision of the Examiner to the board, and from there to the Commissioner in person, and finally to the courts bring us to still more complicated discussions, and each individual case must be treated on its own merits.

DENVER POST OFFERS $10,000. FIRST REAL AVIATION PURSE IN AMERICA

The first big cash prize in America for aviation open to all is the $10,000 purse of the Denver *Post*. This sum is divided into two parts as follows:

THE FREE FOR ALL.

Five thousand dollars in gold for the first aviator to make a successful flight from a point in or near Denver, in a "heavier-than-air flying machine." Distance of flight to be twenty miles, and then return to the original starting point. This offer open to aviators of the world.

FOR WESTERN INVENTORS.

Five thousand dollars in gold to the first Western man to invent a "heavier-than-air" machine that will make a successful flight from a point in or near Denver. Distance of flight ten miles, and return to original starting point. This offer confined to inventors living in Colorado, Wyoming, New Mexico, Montana, Utah, Idaho, Nevada, the Panhandle of Texas, Oklahoma, Kansas, Nebraska or the Dakotas.

CONDITIONS OF CONTEST.

All flights will be held under the conditions that control the government tests of "heavier-than-air" machines, except as to distance. Denver, with its grassy plains, affords unusually favorable conditions for successful experiments in aviation. Offer open till Jan. 1, 1910.

OTHER AMERICAN CASH PRIZES.

Aeronautics.—Four prizes of $50 each to the first four aviators not having before made 500 meters in flight who during 1909 make this distance.

C. F. Bishop.—Four prizes of $250 each to the first four aviators who during 1909 make a kilometer. Other conditions same as above.

F. S. Lahm.—$250 to the first aviator to fly 1 mile out of Canton, O.

New Trophy Offered.

Frank S. Doubleday of Doubleday, Page & Co., publishers of various magazines and books, has decided to offer a trophy of value to encourage competitive sport. This trophy will probably be open to both airships and flying machines, though, as we have argued before, it is difficult to see how the flying machine can properly compete against the airship, and vice versa. The difference in the field of usefulness, range of action, speed, etc., make such a competition a little absurd.

CONTINUED ACTIVITY AT AERONAUTIC SOCIETY GROUNDS.

Three More Machines About Ready.

Activity continues at the Morris Park grounds of The Aeronautic Society, despite the Kimball and Shneider wrecks.

Dr. Greene is going along slowly with his big biplane and Shneider is well along on his second machine. The framework of the main planes is finished, the central part of the structure where the meter goes is nearly completed and another 30 days will see renewed trials, no doubt. He has purchased an Elbridge motor and results of this new motor for aviation purposes are awaited with interest.

The biplane of George A. Lawrence has slowly evolved itself into a complete machine and this will be ready for the motor in a few days.

F. Raiche has nearly completed a biplane of about the size of the Curtiss machine, resembling it very much, though some modifications have been made. Instead of supporting the front control by two bamboo rods, only one is used, the necessary staying being done by wires. Charles M. Grout is rebuilding an automobile motor for use in this machine, and trials should be had by the time this issue is in the mail.

E. R. Ernst has built a big structure, exactly like a canvas box, open at the bottom, with two large holes in each side in which propellers rotate in a vertical plane. These are intended to draw the air in with great force against the top side of the box, exhausting it at the bottom. Mr. Ernst will soon be confronted with a very concrete awakening, that is, if he gets his motor in and tries it.

Octave Jean has been operating his machine with a small 2-cylinder motor. He depends for lift and propelling force on the revolution of rectangular frames inclosing feathering blades.

The Lindsay biplane is still awaiting a motor.

R. E. Scott had another trial out of his unique glider following his successful towed flights on the day of the second exhibition, but on this occasion it was wrecked in flight.

The usual weekly meetings of the Society have been held each Thursday night at the Automobile Club and have been attended by the characteristically large number.

Though Mr. Kimball promised to rebuild, no signs of a start are apparent.

Dr. Walden is installing the Society's motor in his combination Langley biplane and is practically ready for trials.

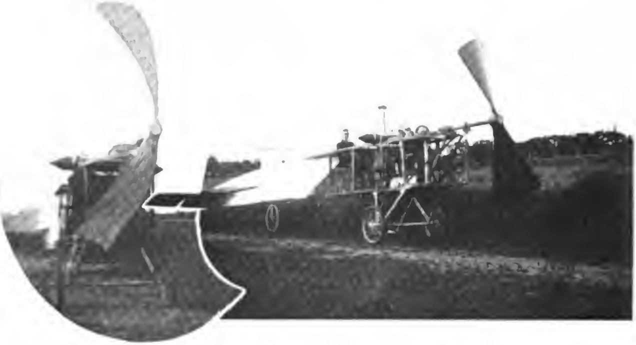
The Raiche Aeroplane.

The details of construction are as follows: It is 33 ft. in width, and is 28 ft. 6 in. from front to rear rudder.

Each main plane is in 3 sections supported by 20 struts. The intermediate section is doubly reinforced by heavier struts, and rests on a square frame of oak 6 ft. x 6 ft. Under this frame in the rear is a truss of ½-in. steel tubing, 6 ft. in width. To this truss are attached 26-in. motor-cycle wheels with specially constructed hubs 8 in. in width. At the center and below this truss is attached a spruce keel running 9 ft. 10 in. to forward wheel and attached thereto. The runners of the main planes are 3 ft. 6 in. apart; the ribs are 4 ft. 6 in. and 4 ft. 10 in. in length, with a curve of about 4 in., brass tipped and make the planes escalloped in the rear. At each end of the main planes and midway between are stability planes 2 ft. x 6 ft.

The front rudder is of special design, supported on each side by a single length of bamboo, and piano wire. It consists of two horizontal planes 2 ft. x 6 ft., a center section of 18 in. having a peculiar curve to assist in rising quickly; a vertical diamond shape plane is placed between these planes, 2 ft. x 3 ft. The rear rudder has a single horizontal plane adjustible to any angle, 2 ft. x 6 ft.; a vertical plane intersects the horizontal planes and guides the aeroplane in flight and on ground. All the controls are by fine cable with an automobile steering wheel working on a drum. The propeller is a Bleriot model.

The motor is especially made, 28-32 h. p. 4 cyl., turning over 1,400 r.p.m.; copper jacketed, water cooled, designed by Chas. Crout, and weights 130 pounds. The machine work



The Beach-Willard Monoplane with the Wings Off

and trimmings are from H. Von Hadlyn, New York City.

The weight of aeroplane complete for flight with aviator is about 497 pounds. Mr. Raiche has a prospective order for a similar machine which is to be completed within 30 days.

Biggest American Airship.

John A. Riggs and Joel T. Rice, of Hot Springs, Ark., will build at Morris Park a bigger airship than is in existence in this country. This will be about 100 feet long. After obtaining bids from all the American balloon builders it was decided to give the order to A. Leo Stevens, and construction work has already started.

Trial of Beach-Willard Monoplane.

On August 1st and 2nd, trials were made of the Beach-Willard monoplane, minus the main supporting surfaces. The engine ran at only 600 r. p. m., and the big two-bladed propeller ran at half this speed, being so geared. At a speed of 300 r. p. m. the propeller showed on a scale a thrust of 325 pounds.

At an estimated speed of 25 miles an hour, the rear surfaces lifted the tail and rear wheel off the ground. At the moment this occurred, of course, it was impossible to steer the machine on the track. Circuits of the track were made at a lesser speed, but on the last the engine speeded up itself, the rear lifted, and before the motor could be shut off, the machine ran into a fence, damaging the former somewhat. The rear vertical rudder will now be changed to the rear end of the framework.

A detailed description of the machine was given in the July number of *Aeronautics.*

A Westerner's Way.—It is infrequent that in the East that we always give credit where it is due. Leo Stevens has been one of the foremost in promoting ballooning, but his endeavors have often been attributed to mere business foresight. It remained for the city of Dayton to put on record a tangible bit of appreciation in an editorial in the Dayton "Journal."

"The gratitude of Dayton is surely due Mr. A. Leo Stevens, the intrepid balloonist, who made the ascension with a party of friends Friday and the story of whose successful flight was carried in the "Journal's" news columns Saturday morning. The ascension was perfect, the voyage was delightful, the experience exhilarating, while the descent was most successful.

"Mr. Stevens came to Dayton at his own expense and without a penny of compensation brought his balloon into the program and gave one of the most brilliant and interesting events of the long line in connection with the celebration. He did this to aid in honoring Dayton's sons, his friends, the famous epoch-makers in aeronautics. He did this to pay due deference to the historical importance of the occasion. He did it from pure love of science and interest in his profession. In doing so he showed himself devoid of professional jealousy, and a devotee to pure friendship.

"For all this Mr. Stevens is to be heartily commended and a liberal share of the honor of the great occasion should be awarded to him cheerfully and ungrudgingly."

PAPERS OF THE

INTERNATIONAL AERONAUTICAL CONGRESS

President: **Professor Willis L. Moore.**
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Chairman Executive Com.: **Augustus Post.** Sec'y Committees: **Ernest La Rue Jones.**

AIRSHIP PROPELLER PROBLEMS

By Prof. Calvin M. Woodward

(CONTINUED FROM LAST ISSUE)

If a certain horse-power with a certain arrangement of propellers will drive an airship 10 miles per hour, it will require 8 times as many horse-power to drive it 20 miles per hour.* This does not mean that the motor must make eight times as many revolutions per second, but the increased work of one revolution multiplied by the increased number of revolutions would involve just eight times as much mechanical work.

5. Discussion of [XI].

Given H', C, R, and r for a Given Ship and Motor, What Speed can it Attain in a Still Atmosphere?

Solving for V we have

$$V = \left(\frac{H'}{\frac{8\,(C\pi R^2)^{\frac{3}{2}}}{275r} + \frac{C\pi R^2}{375}} \right)^{\frac{1}{3}} \ldots\ldots\ldots [\text{XII}]$$

6. Another Formula for V When We Know the Value P_1, for a Particular Velocity V_1, with a Given Ship with a Given Motor and Propellers:—

From [IX] we have

$$\frac{P}{P_1} = \frac{V^2}{V_1^2} \text{ or } P = \frac{P_1}{V_1^2} . \; V^2$$

Substituting this value of P in [VIII] we have

$$H' = \frac{P_1}{550 V_1^2} \left(\frac{16\sqrt{P_1}}{V_1 r} + \frac{22}{15} \right) V^3 \ldots\ldots [\text{XIII}]$$

whence

$$V^3 = \frac{550 V_1^2 H'}{\left(\frac{16\sqrt{P_1}}{V_1 r} + \frac{22}{15} \right) P_1} \ldots\ldots\ldots\ldots [\text{XIV}]$$

The utility of this formula may be shown by substituting known values for P_1, V_1, r, and H'. Thus, suppose P_1 is known to be 650 lbs. when $V_1 = 15$ (miles per hour), then [XIV] gives for a 85.5 horse-power motor and a propeller area, $A = 206$ sq. ft. $= \pi\,(8.1)^2$

$$V^3 = \frac{(550)\;(15)^2\,[60]}{\left(\frac{16\sqrt{650}}{15 \times 8.1} + \frac{22}{15} \right) 650}$$

whence $V = 13.3$ nearly.

That is to say, a complete mechanism consisting of propellers and a 60 horse-power motor, which when anchored can produce a thrust of 650 lbs.—that being the thrust required when a certain air-ship is moving 15 miles per hour—can actually drive that air-ship only 13.3 miles per hour, unless the limit of 60 horse-power is exceeded.†

7. Numerical Results.

The following table is of value in estimating the power required with propellers of various sizes for pulling or lifting different amounts *when the frame is anchored in still air.* The propellers are supposed to be ideally perfect in design and construction, and no allowance is made for cross currents and for friction.

TABLE SHOWING HORSE-POWER WHEN P THE THRUST, PULL OR LIFT, AND THE RADIUS OF THE PROPELLER, OR THE TOTAL PROPELLER AREA ARE GIVEN.

P = pull or lift in lbs.	r = radius of equivalent propeller in ft.	A = total area of all propellers in sq. ft.	H = horse-power required.
‡ 1	1	3.14	0.029
4	1	3.14	0.23
100	1	3.14	29.00
1	5	78.53	0.006
100	5	78.53	5.8
400	5	78.53	46.4
400	10	314.12	23.2
650	8.1	206.00	59.5
900	10.4	339.93	75.5

---

* It will be seen later that a propeller fitted to a certain speed of the ship and to the pressure p upon the yielding air, is not properly fitted to a different speed and a different backward pressure. It should also be remembered that while the value of the radius may be the same, the *pitch* of the helicoidal blades should be changed.

† Throughout this paper I mean by one "horse-power" 550 foot-lbs. of real "work" per second, I make no use of a so-called "nominal horse-power."

8. NUMERICAL APPLICATIONS OF FORMULA [VIII].

$$H' = \frac{P}{550}\left(\frac{16\sqrt{P}}{r} + \frac{22V}{15}\right) =$$

$$\frac{P}{550}\left(28.35\sqrt{\frac{P}{A}} + \frac{22V}{15}\right)$$

P means the resistance of still air to the motion of an air-ship, moving *V* miles per hour, determined by experiment or calculated by means of formula [IX].

P	*V*	*r* feet	*A* sq. ft.	*H'*
100	10	10	314.16	5.58
100	15	5	78.54	9.8
650	15	8.1	206.—	85.5
400	20	10	314.16	44.51
900	30	10	314.16	150.5
1000	60	20	1256.64	206.

The above six cases apply to six different air-ships. The third is approximately that of Mr. Wellman, judging from the data he has published.

9. In the discussions of this paper, I have made no attempt to approximate the loss of energy due to friction in the mechanism, or to the friction of the air upon the blades; or that due to defective design; or to the impact of the propeller current upon the frame-work, its contents and connections.

Neither have I allowed for the energy spent fruitlessly upon diverging currents of air. To prevent, or rather to utilize such currents, I propose a short and thin enclosing cylinder for each propeller, with a slightly-flaring forward end.

I am preparing to experiment upon "lifting" fans (with vertical shafts) of various radii and various numbers of blades, and with enclosing cylinders of various lengths.[*]

Meanwhile, my formulæ are published in the hope that others may find the best designs for the entire mechanism, and the several coefficients of efficiency.

10. CHARACTERISTICS OF THE IDEAL PROPELLER.

1. The radius must be as large as is practicable.
2. The blade surfaces must be parts of right helicoids (*i. e.* like the bearing surfaces of a square-threaded screw).
3. Every blade must run to the central hub with *full depth.*
4. The "pitch" of the screw surface must be determined by the speed of rotation of the shaft and the velocity of the air through the propeller.

For Example: suppose the air-ship frame be anchored, and that the required thrust, or pull, of the propeller is 100 lbs., and the radius of the propeller be 8 ft.

Then $A = 201$

$$p = \frac{P}{A} = \frac{100}{201}$$

$$v = \sqrt{\frac{2g\,p}{w}} = \frac{80}{\sqrt{Aw}} = 20 \text{ nearly.}$$

That is, the backward current of air passing the propeller must be 20 ft. per second. If *T* be the revolutions per second and *s* the pitch of the screw we have $Ts = v = 20$ in the case assumed.

As *T* is generally known for a motor doing its maximum work we have

$$s = \frac{v}{T} = \frac{20}{T}$$

If *T* be 4, we have the pitch = 5 feet, if the ship is anchored.

If now the air-ship is moving 15 miles per hour, we have $v' = 22$, so that the air passes the propeller at the rate of 20 + 22 ft. per second. Hence the pitch of the helicoidal blades must be

$$s = \text{pitch} = \frac{v + v'}{T} = \frac{42}{4} = 10\tfrac{1}{2} \text{ feet.}$$

If there are six blades, the depth of each should be 1.75 ft., or 21 inches, and each should subtend a circular arc of 60°.

The general formula for the pitch of the propeller of an air-ship is

$$s = \frac{\dfrac{16}{r\sqrt{P}} + \dfrac{22V}{15}}{T} \quad \ldots\ldots\ldots\ldots\ldots [XV]$$

in which *V* is the speed of the ship (in still air) in miles per hour; *P* is the resistance to the ship's motion (or the thrust of the propeller); *r* is the radius of the propeller; and *T* is the number of revolutions of the propeller per second.

All helicoidal surfaces should be as accurate and as smooth as possible on both sides of the blades.

It seems reasonable that the number and axial depth of the blades should be such that no air would pass the propeller without being directly acted upon by the propeller, in other words the projection of all the blades on a plane normal to the axis should make a complete circle. That is however a matter to be experimented upon.

It is hardly necessary to add that if there are two or more propellers, the pitch of the blades should in every case be $\frac{v + v'}{T}$ in which the values of *T* and *v* may not be the same for all propellers.

While the ideally perfect propeller should be suited to a given set of conditions, it is reasonable to adopt as the given conditions those which obtain when the motor is making its regular working maximum effort.

[‡] In a recent number of "Motor" (London), Mr. Rankin Kennedy says: "It would be a simple matter to prove by calculation that the power required of a propeller to sustain one pound weight in the air is 0.03 B.H.P. In any case, theoretically, 0.03 B.H.P. must be allowed for every pound weight to be lifted." Mr. Kennedy then goes on to say, that it would take only 12 H.P. to lift or sustain 400 lbs.! The statement is dangerously loose. It would be true only on condition that the effective area of the propeller be also increased 400 times! With the *same propeller*, it would take 240 horse power to lift his 400 pounds! See Formula [X].

[*] I learn from my friend, Dr. Octave Chanute, that experiments with enclosing cylinders have been made in Europe, but I have no access to their results.

IN THE WORLD OF AVIATION

CURTISS MAKES NEW PERSONAL RECORD.

52-Minute Flight in Aeronautic Society's Machine.

WILLARD MAKING SUCCESS OF LEARNING.

AFTER the second exhibition of The Aeronautic Society at Morris Park, the Curtiss aeroplane contracted for by the Society was taken to Long Island. Mr. Curtiss wanted to get some practice before going abroad to meet Bleriot, Latham and the other crack aviators of Europe in the Rheims contests, and he felt that the Morris Park grounds of the Society were too small.

Then, too, he had to teach two aviators appointed by the Society and the Hempstead Plains were deemed ideal to teach the young idea how to fly.

The balance of the contract price, $5,000, was finally made up by individual members of the Society, and the machine formally turned over to the Society. It was expected that the exhibitions at Morris Park would provide funds for the acquirement of the aeroplane and establish the long looked for but as yet unaccomplished experiment fund. In order to repay the subscribers to the purchase price of the aeroplane, the Society has leased the machine to a company composed of many of the contributors, which company will place the aeroplane on exhibition and make flights with it at various parts of the country.

Mr. Curtiss began flying, after the reassembling of the machine in a tent at Mineola, on July 13, making two short flights and one of 2 min. 26 sec. On the 14th he made one of about 5 min. On the second flight the propeller was found to be loose, through a defective bolt, and a landing was made. The following day two flights were made, the dense fog making a long flight inadvisable. As soon as the fog lifted, one flight of 15 min. was made.

On July 16 he made the first really "long" flight. After a 12-min. spin, he stayed up for 31 min.

FLIGHT FOR SCIENTIFIC AMERICAN TROPHY.

On July 17, Curtiss made official flights for the Scientific American Trophy and the President's Prize of the Aero Club of America.

Charles M. Manly, the Official Observer of the Aero Club of America laid out a triangular course measuring 1.311 miles around. The President's Prize was competed for first. The distance flown in competition for this, was 1.35 mile, which was covered in 2 min. 30 sec

After making the first circuit in competition for the President's Prize, Curtiss started again and made 19 more rounds of the course, covering a total official distance of 25.002 miles in the official elapsed time of 52 min. 30 sec. The actual distance travelled was some greater than this, taking into account the turns; and this, of course, would increase the average speed which officially was 28.68 miles per hour. The average height was 20 ft. with a maximum of 40 ft. The weather was ideal at the start. There was a calm for the first five rounds. A light breeze sprang up then and gradually increased, till eventually while he was making a turn only a few feet above the ground the wind blew him roughly down. This is the longest flight that has been made by anyone in America besides the Wright Brothers.

The President's Prize, which Curtiss won, amounts to $250, being the first of four offered by the President of the Aero Club of America to the first four aviators who, during 1909, cover a kilometer. The competitor, of course, must not have made that distance in the same machine previous to competition.

Curtiss In Flight At Mineola

The Scientific American Cup is offered to the aviator who make the greatest distance during the year 1909, with a minimum of 25 kilometers. This cup, however, will not be awarded to those who do not make formal entry, so that if the Wrights should stay up a week, they will have no more chance for the cup than the unfortunates who have to stay on the ground.

WILLIAMS, PUPIL, SMASHES MACHINE.

After a short flight by himself, Curtiss started in to teach the two men selected by the Aeronautic Society, Alexander Williams and C. F. Willard. After a toss-up for place, Willard got in and made a successful flight of several hundred yards. Curtiss then flew the machine back to the start.

Williams' turn was next—and last. He got in the seat, the machine was started and quickly left the ground. Then it began to shoot rapidly upward and heel over. The few witnesses present seeing Williams apparently limp in the seat, began to get started on a run to the place where they saw the machine would probably fall. And sure enough it did. The front control struck the ground first and the aeroplane fell bottomside up, with the engine still running. Williams was rushed to the Mineola hospital where it was found he had a broken arm and thumb.

The machine was pretty well done up and it was necessary to wait for a new front rudder, a few sticks, a propeller, etc., from the Hammondsport factory. "Never again," said Williams on regaining consciousness.

It was not till the night of Tuesday, Aug. 3, that the machine was in flying order again and Curtiss made several short flights. The following morning it was planned that Willard take his second lesson as on Thursday Curtiss was to leave for Europe.

After journeying on to Mineola in the midnight hours, the dawn found a breeze blowing, and though the machine was brought out, no flights were made. Rain followed the wind and next morning, Thursday the 5th, flight was again impossible. Curtiss left for his steamer very disappointed for he had taken down a 12-gallon gasolene tank and had the hope of setting a world's record before leaving.

WILLARD TEACHES HIMSELF.

On the 7th, Willard made four fine little flights and on the 8th, five more. Chas. F. Willard is quite well known as an automobile expert and race driver. At one time he had a large machine shop where the F. I. A. T. place now is on Broadway and has driven in big races abroad.

On the 9th Willard continued trials, spending most of his time in practicing turns and landings. Practice flights will continue until the first engagement.

Curtiss Sails for Europe.

Glenn H. Curtiss sailed on La Savoie, with "Slim" Schriver, to represent America in the international flying machine contests at Rheims during the last week of August.

On the same steamer went an exact duplicate of the aeroplane bought by The Aeronautic Society, with the exception that it has 30 in. less spread and is fitted with a more powerful motor, about which there is much secrecy. Some say it has four cylinders, some say eight; employes of the Curtiss plant shut up like clams when the motor is mentioned.

Entry has been made by Curtiss in the Gordon-Bennett Aviation race over a 10-kilometer course, twice around. The fastest time takes down $5,000 in cash to the aviator and a $2,500 cup to his home club. There are still other contests for a purse totaling $40,000.

Willard Doing Great.

Mineola, Aug. 13.—This morning Chas. F. Willard, who is learning to operate the Aeronautic Society's aeroplane, made a magnificent flight. Unfortunately it was not officially timed, and therefore may not be officially recognized as a record. Starting from Mineola he flew across to Garden City, there turned to the left and made for Meadow Brook, turned again to the left and passed by Westbury, and from there went on to Hicksville, where he turned and made for home. When about two miles from his starting point he heard something go suddenly wrong with the engine. He immediately shut off and glided to the ground. At the moment he was about 150 ft. in the air. But he had both the machine and his nerves under perfect control, and effected a perfect landing. Examination of the motor showed him that the cam shaft driving the magneto was broken. He was in the air 19 min. 30 sec., and the distance covered across country was about 12 miles. It had been Mr. Willard's intention to continue his trip from Hicksville to Hempstead, to Floral Park, and New Hyde Park before alighting, and so to break the world's record for cross-country flight. The achievement was remarkable, seeing that this was only Willard's twenty-first trip in the air. During his voyage he passed over the telegraph wires five times, crossed eight roads, the Motor Parkway at three different points, several clumps of trees and two gangs of Italian navvies working on the extension of the parkway. On account of the roughness of the surface of the plains the machine was carried back to Mineola on a wagon.

On the night of the 11th Willard made two short flights and was just on his way when a bolt broke. He borrowed one from an automobile and then flew a short distance in the dark.

Yesterday morning two fine trips were made lasting about five minutes each. The machine was well out of sight and bearing over the hazy plains. He flew over the automobiles present, the trees and houses bordering the grounds. On the third trial the wire to the rear rudder broke and the machine steered sharply around. Willard was quick and made a good landing on some rough ground.

It is curious to note the aeroplanes cropping up all over the country, in backyards, woodsheds, barns and outhouses. Nearly every boy in the country is building a glider and the books telling how to make them, published by Aeronautics, are nearly exhausted already. Almost every large city has its embryonic flyers. What all these will amount to is a question. They say every barefoot boy is a future President.

Howard Colby, brother of Ex-Senator Colby, of New Jersey, is anxious to buy a Wright aeroplane. E. S. F. Randolph, of Westfield, N. J., is another applicant for the privilege.

C. F. Willard Flying at Mineola

Testing Thrust on the Curtiss Machine — The Three to the Rear Are Noting the Pull On A Spring Balance

The Langley Machine on Exhibition.

The officials of the Smithsonian Institution and the National Museum at Washington take great pride in the collection of models and contrivances relating to aerostatics and aerodynamics, which are in possession of the joint institution. Charles D. Walcott, the secretary of the Smithsonian Institution, and who is a member of the Aero Club of Washington, is taking a personal interest in the plans for enlarging and giving prominence to the exhibits relating to aeronautics.

The Langley machine, the "Buzzard," which was wrecked in the unfortunate attempt to launch it from the houseboat used during the experiments made by Professor Langley on the Potomac River, has never been placed on public view. This has been largely because of the criticism that was made of Professor Langley and because of the sentiment attached to his work, he having been secretary of the institution at the time he conducted his experiments. Now that the public has awakened to the full realization of the practicability of dynamic flight and is better able to give Professor Langley the credit which should have been his before his death, Mr. Wolcott intends to place on view the large machine, which has been rebuilt.

George C. Maynard, assistant curator of the National Museum, will have direct charge of arranging the aeronautical exhibit in the new building as soon as it is ready for occupancy. R. L. Reed, who did the mechanical work for Professor Langley, still guards the "Buzzard," which is stored in the old workshop where Langley did most of his work. This shop stands in the rear of the Smithsonian Institution, and is full of interest. The walls are literally covered with models of propellers—each of a different design and intended to indicate the most efficient type for flying-machine work.

Photographs of the various models used by Langley, showing them in flight, adorn the walls of the old workshop. A boomerang and other contrivances used by the famous scientist in his efforts to conquer the air are there as testimony of the thoroughness with which he pursued his investigations. Parts of the framework which have never been used lie about on the floor. Most of them are hollowed spruce, strengthened with metal bands at intervals, making an extremely light and yet strong material for building the machine. Hollowed steel tubes were also used, and these are remarkable for their lightness and strength.

In the shop, displayed in marked contrast, but not nearly as interesting, is the basket and machinery of the dirigible balloon brought to this country by Santos-Dumont. This was donated to the institution by the Aero Club of America, and was placed in the shop because the present building of the institution does not afford space for placing it on exhibit there.

The three power-driven models successfully flown by Professor Langley are now on public exhibition in the museum. One is a gasoline motor driven machine, while the other two are steam-power aeroplanes. They were the first successful power-driven, heavier-than-air flying-machine models. The Manly motor, built especially for Langley's "aerodrome," is also on exhibition.

One of Lilienthal's two-winged glidng machines, a model of Hargrave's compressed-air flying machine, which made a flight of 319 ft., and Stringfellow's aeroplane model, which was exhibited in the Crystal Palace, London, in 1856, and the engine of which was remarkable for that period, are also on view at the museum.

Octave Chanute will present the institution with one of his gliders, and the Wrights intend to make a working model of their aeroplane especially for exhibit in the Museum. It is also understood that Dr. Alexander Graham Bell is to donate some of his tetrahedral kites as an example of that method of constructing supporting surfaces.

FLYING IN CANADA.

Petawawa Camp, Ontario, Aug. 6.—The Baddeck No. 1, built by the Canadian Aerodrome Co., the first aeroplane built entirely in Canada, is ready and will soon make flights in charge of Messrs. McCurdy and Baldwin. Military experts from various parts of Canada will witness the tests. If it is a success the aeroplane may be, as has been announced in these columns before, taken to England.

Silver Dart Damaged.

Ottawa, Ont., August 2.—The "Silver Dart," with which J. A. D. McCurdy made many successful flights at Baddeck last winter, was partly wrecked to-day at Petewawa Military Camp, where trial flights were in progress.

The aeroplane had made four successful short flights. On landing from the fourth trip, the machine struck a knoll, ricochetting and striking again with such force as to wreck the wings and controlling apparatus.

The "Silver Dart" was the fourth machine built by the Aerial Experiment Association, and the most successful. The longest flight was one of 20 miles.

Smidley Monoplane Completed.

John H. Smidley of Bridgeport, Ct., has been building his machine in Washington, and it is now ready for experiments. A Duryea motor has been shipped.

The present machine, of man-carrying size, has a bamboo framework, wth supporting planes of light canvas, painted with a rubber solution to render them impervious.

The spread of the main plane is 32 ft., with a depth of 5 ft. The rear plane is 17 ft. spread and is bow shaped.

The whole machine, including the motor, weighs but 225 pounds. It runs on four small wheels at the bottom of the frame. The designer says it will rise in a run of 50 ft. on an average smooth grass field.

There are several rather unusual features about the machine. The main frame contains a rectangular box of bamboo and is so split that it will contain the propeller practically in the center of the machine.

The propeller is of built-up wood, 8 ft. 6 in. in diameter, with an increasing pitch from the tip of the blades to the center. It has but two blades, though some of the models with which Mr. Smidley has experimented have three.

The propeller is so placed that the center of thrust will be on a line with the surface of the monoplane. This, he says, will do away with the torque that would otherwise come from having a single propeller so large. It will run at a maximum speed of 600 revolutions.

The controlling planes consist of two horizontal rudders placed in front, not superposed, as in the Wright machine, but side by side. Raising one of them will turn the machine to the left; raising the other turns it to the right. Both raised or lowered elevates or depresses the whole machine.

The rudders are worked from a single lever, which, the designer says, is a decided advantage, as things happen in the air too quickly for an aviator to be bothered with much mechanism.

The machine carries about a pound to the square foot of surface. The designer has some ideas of his own about the curve of lifting surfaces, and will try putting the maximum curve at rear of planes instead of at entering edge. He is also trying a knife-edge entering.

A NEW WORLD'S AERO CENTER

IN 1907 the international balloon race started from St. Louis. For a while the interest in ballooning was large, but it was not deep. It was a kind of interest that regarded the sport of ballooning as a thing apart—something for men who were willing to risk their lives. Nowadays things are different and even the uninitiated of the more than half a million people of St. Louis begin to see aeronautics in a different light.

Not so very long ago a balloon passed over the city after starting from the gas works. The comment was much the same as people make when they see a hot-air balloonist or a parachute jumper sailing high overhead. But the other day six men, in a racing balloon that traveled low—sometimes it seemed very close to the roofs of high buildings—drew thousands from their desks downtown. These spectators watched the balloon with a new interest and something like appreciation. I warrant you that a large percentage of these people envied the men in the air.

This all has to do with the truly remarkable advances in aerial sport that have been made in St. Louis within less than a year. In six days, recently, four ascensions were made and fourteen passengers carried. Three women—the first ever to ascend from St. Louis in gas balloons—went up with H. Eugene Honeywell one day, and two days later another woman ascended, *a deux*, with John Berry. Then followed quickly the cries of the women left behind, cries that begged for ballooning. At least a dozen women are scheduled to make balloon trips soon and a woman's balloon club is forming.

It was thought rather unusual several months ago that five men should ascend together in one balloon basket, but Honeywell, who piloted the party, soon set a new mark by carrying six. Just to show that even this was not remarkable, he did it again and again, until now the thing is quite commonplace.

Speaking of organizations, the Aero Club of St. Louis is now only one of the clubs here, although, of course, the only recognized one. Besides, the South Side Aero Club has organized with 350 members, it is claimed, and a number of them have already made ascensions. Others are ticketed to go soon.

It has always been a lamentable fact—to all but the newspaper cartoonists—that L. D. Dozier, president of the Aero Club of St. Louis, has never made an ascension. Now Mayor Kreismann, of St. Louis, has in a way challenged the Aero Club president to go, saying that he, the mayor, will try it, if the Aero Club head will go with him.

St. Louis now has three licensed balloon pilots—Albert Bond Lambert, who holds cards in the Aero Club of America, Aero Club de France and the Aero Club of St. Louis; H. E. Honeywell and John Berry. S. Louis Von Phul has made nearly all of his ascensions to qualify for a license which he expects to earn before the aerial tournament of St. Louis in October. There are three other men who hope to have the license by that time so that they may compete in the balloon races, to be held under the rules of the International Aeronautic Federation.

These carnival events are open to the world, some $12,000 having been appropriated for the purpose, with every indication of that amount being raised to $20,000 before the events take place. The balloon race will occur October 4, and on the same day there will be a minor race for 40,000 cu. ft. balloons. On October 9 there will be a dirigible contest, the winner to be the "dig" which makes the greatest speed over a given course. For aeroplanes on the day following, the test will be one of endurance, the prize going to the "plane" remaining aloft for the longest period. Besides, there will be other interesting air events.

The Aero Club of St. Louis has provided itself with private ascensions grounds in a desirable locality, where, in the near future, all of the ascensions of the club balloons "St. Louis No. 3" and "Missouri," and others that members may purchase, will take place. The grounds are surrounded by a fence and will later be provided with a grand stand and a second enclosure. By fall there will be taps from the gas main on the grounds for 12 balloons; it is possible to make accommodations to inflate 18 envelopes at one time. At present there are three taps.

The officers of the Aero Club of St. Louis are L. D. Dozier, president; D. R. Francis, vice-president; D. C. Nugent, vice-president; G. H. Walker, vice-president; A. B. Lambert, honorary secretary; H. N. Davis, treasurer. The names are those of the most prominent St. Louisans. The club is solicitous of entries throughout the world. Particulars and information desired will be forwarded upon application to the honorary secretary, 2100 Locust Street, St. Louis, Mo.

THE FRANKFORT AERO EXPOSITION

By H. A. Meixner

SPECIAL CORRESPONDENT

THE opening of the international aeronautic exhibition took place under very unfavorable weather conditions. The public has been waiting for the arrival of the Parseval airship, but the rain and wind prevented it from coming. It is now being shipped by rail.

On July 30 the Zeppelin II arrived here from Friedrichshafen. This airship now belongs to the German government and will stay in Frankfort only two days. On August 2 it will start for Cologne, where it is to be stationed. The third Zeppelin will come to Frankfort at the end of August, remaining for a couple of weeks.

The shed for the Zeppelin III is now under construction, the framework being of wood, covered with canvas. The other sheds, housing the captive kite balloon, system Parseval-Sigsfeld, built by the Riedinger balloon factory; the mushroom balloon of Gans-Rodeck, and the Parseval and Clouth airships are all of the same construction. The two latter airships arrived by rail two days ago and are not yet ready for ascensions.

The flying grounds are removed from the exhibition grounds. There is a "take-off" hill for gliders but it is not well situated, as experiments are only possible when the wind blows from the southwest. Most of those gliders shown are of the "Chanute type." The arrangement consists of a large platform built upon the top of a sharp declivity, and sand or earth has been filled in so as to make a gradual descent.

The exhibits which have been brought together give a fair view of the present state of aeronautics. There are about a hundred models of flying machines, most of which show how not to fly.

At the entrance to the hall is a full-sized machine, shaped like a bird. At the ends of the wings are pivoted blades to represent the feathers. To date no one has tried the machine. There are many freaks of this kind.

There are only two man-carrying machines here up to the present: a Farman and a Wright machine, both well known so that it is not necessary to give a description of them. One of the original gliders used by Lilienthal has been loaned by the museum of Munich. It is a birdlike structure and shows signs of considerable wear and tear.

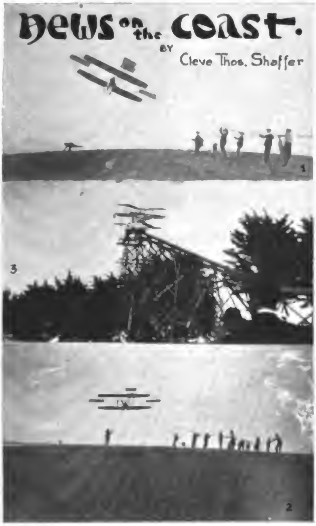
The middle of the hall is filled with the balloon Preussen, which holds the record for height.

Several high angle guns are exhibited by Krupp and the Rheinische Metalwarenfabrik. The devices for bringing down balloons and aeroplanes seem to show that the means of destroying an aerial fleet are better developed than the art of building motor balloons and aeroplanes.

At Mannheim has been started the largest airship of the world, constructed by Prof. Schutte, of Danzig. The capacity of this huge dirigible balloon will be 4000 cubic meters more than the Zeppelin. The gasolene motors will develop from 500 to 600 h. p. The speed is estimated at from 50 to 60 kilometers an hour. The framework is wood, covered with balloon cloth. The gas bags are made of goldbeaters skin. The floor space necessary for the shed to house it will measure 60 by 130 meters.

News on the Coast.

By Cleve Thos. Shaffer



1. The Shaffer glider an instant before an accident due to breaking of both wing tips and front rudder control lever. 2. Shows machine at start of flight in which high elevation was reached. 3. Wolf-Becher gliding chute.

For their experiments in gliding, Messrs. Wolf and Becher of Fitchburg, Cal., have built an inclined railway down which a car holding the glider runs and gives initial impetus. The start is 50 ft. high. On the first attempt the heavy car in some manner caught fast to the machine and the glide terminated but a few feet from the end of the chute. The automatic fore and aft equilibrium device was, consequently, not tried.

A successful test for lift is reported of Messrs. Arnold and Hiniker's 12-ft. model helicopter-aeroplane-dirigible. Power is delivered to the propellers by a flexible shaft from a stationary electric motor.

J. Zenon Posadas of the Pacific Aero Club will shortly try out his double-decker fitted with a Peugeot motor.

Charles C. Bradley, V. P. of the Pacific Club, has started work on a large-size double-decker.

L. C. Van Riper and J. E. Morhardt of Pasadena deserve plenty of credit for patience in their aeroplane work.

L. S. Dorland of San Francisco is at work on a helicopter of novel design. There are eight propellers of 12 blades each, 24 inches in diameter, revolving in a casing with individual wells for each propeller. When completed the machine will weigh about 500 pounds. The motor is a Curtiss 8-cylinder, 40 horse power.

At the Portola celebration in October it is possible that the Pacific Aero Club will take charge of aeronautic events, the Portola people to put up the purses.

Capt. P. A. Van Tassel, of California, has disposed of the balloon "United States" which broke away from its moorings July 4 and was recovered, and has just completed a fine new one built on the block system of 40,000 cu. ft. He expects to pilot a number of ascensions in the near future. On Aug. 22 he is scheduled to make an ascent, taking as passengers Miss Geneve Shaffer, sister of the Pacific Aero Club's secretary, and Prof. Jos. Hidalgo of the same club.

Mr. A. C. Pillsbury, of the Pacific Aero Club, has purchased the tiny balloon "Fairy" from Roy Knabenshue, and expects to make some ascents soon. He has built a special camera for taking photos while aloft.

Since Charlemagne Sirch of Los Angeles announced last year the principal features of his hot-air dirigible, Sweden has produced an apparatus using heated air for buoyancy, and one or two others have been claimed. It may be of interest to note that Mr. Sirch endeavored to have the War Department change its specifications to cover the use of heated air as well as hydrogen gas.

The Alaska-Yukon-Pacific Exposition at Seattle has offered $25,000 for a contest between Bleriot and the Wrights.

Among the latest aspirants for aeronautic fame is Dr. Davenport Kerrison, of Jacksonville, Fla. Mr. Kerrison has been for many years a close student of the flight of birds, and thinks, if his theories work out in practice, that he has brought the art of flight a step or two nearer to success. He has just completed a working model on a scale of one inch to the foot. The full sized machine will measure 37 ft. in length exclusive of the horizontal control, which extends 16 ft. and the forward horizontal control which shifts forward about 4 ft., taking an upward angle as it does so. The horizontal and forward controls are operated with one lever and act simultaneously. There is another which Mr. Kerrison thinks is an important improvement involved in his machine, the particulars of which he will not divulge until he has applied it to a practical test.

CLUB NEWS

AERO CLUBS GROW IN GLIDDEN'S WAKE.

New Organizations Spring up From Detroit to Denver as Result of Tour; One Coming in Nebraska.

A string of aero clubs reaching from Detroit to Denver is one of the results of the Glidden automobile endurance run which ended at Kansas City late Friday night.

It is said by those who have returned from the trip, of whom Charles J. Glidden is one, that aeronautics has made great advances in the West because of the efforts made by the promoter of the endurance run to arouse an interest in the subject.

The first club was organized at Detroit, and was named the Aero Club of Michigan. After that the Aero Club of Minnesota was formed at Minneapolis, the Aero Club of Colorado at Denver and the Aero Club of Kansas City at the latter place.

While in Denver Mr. Glidden was the guest of C. P. Allen, treasurer of the Denver Motor club; his son, Dr. E. F. Dean, and Gordon L. Wands, secretary of the club. Mr. Glidden suggested the idea of an aero club, and after the close of the dinner the following membership had been secured: Gordon L. Wands, C. P. Allen, L. D. Mosier, F. L. MacFarland, W. H. Sharpley, M. D.; W. M. Johnston, Harold Brinker, Edward F. Dean, M. D.; Sam F. Dutton, W. W. Barnett, Maurice Letts, George E. Cartwright, Carl W. Hurlbert, Thomas F. Daly, William F. Allen, R. R. Blair, M. D.; L. E. Allmon, Morris Mayer, Major L. E. Campbell, Frank Burt and William D. Nash.

The members of the new club are so thoroughly enthused over the proposition that they have already arranged for a balloon ascension Sunday afternoon at the White City through Mr. Burt, the manager of Lakeside, who is one of the members of the new club. The ascension will be in charge of G. L. Wands and Wayne Abbott, who will work together in giving the members instructions in handling a balloon and getting it ready for an ascension.

"Now what we want," said Mr. Wands, "is someone to offer an attractive prize to the first pilot who crosses the continental divide, which has never been done, but which can be accomplished easily with the proper-sized balloon, and the sooner an offer is made the sooner it will be done."

Mr. Glidden has promised those interested in aeronautics in Nebraska that he will undertake to start them in the right direction when he returns to Omaha.

TO ARRANGE FOR LONG FLIGHT.

Mr. Glidden contemplates making the trip within the next few weeks, when he will endeavor to complete arrangements for the flight from Omaha to Boston. These were begun while he was absent on the automobile run, and it was practically decided that the start will be made from Fort Omaha.

In speaking of the matter last night Mr. Glidden said that he and H. Helm Clayton had previously considered this flight. While at Omaha Mr. Glidden discussed the matter with Lieut.-Col. W. A. Glassford and Lieut. Ware, both of whom evinced great interest in the proposed trial.

The Aero Club of Vermont has been organized at Rutland, Vt. Charles T. Fairfield, publisher of the Rutland News, is the president, and George S. Haley, secretary-treasurer. Though the club is in its veriest infancy, a meeting will be called at an early date to complete the organization, elect officers from other cities in Vermont and to receive members. Mr. Fairfield is the first Vermonter to take a balloon trip.

The Aero Club of Kansas City is another club formed by Mr. Glidden on his Western tour. Looks like a "trust." Hurrah for Charles T. Glidden! We ought to have a few more like enthusiasts and there would be a little more activity.

The Aero Club of Minnesota has been organized in Minneapolis with John F. Wilcox president.

The Aero Club of Michigan, in Detroit, was started during Mr. Glidden's Western tour, with William E. Metzger at its head. About 50 members have come in so far and a meeting will be called probably about September 1.

The Aero Club of Colorado was born July 24 at Denver, with Gordon L. Wands, secretary. These new Western clubs being started just at the time the Glidden tour is touring, it looks suspiciously like Charles J. Glidden has something to do with all this commotion.

The club will purchase a 75,000 or 100,000-ft. balloon in the very near future, and is figuring with two parties for an aeroplane. Mr. Wands made several ascensions in a 40,000-ft. balloon, but found it too small, on account of the fact that at an altitude of 5,820 ft. to start with and as they are very anxious to cross the continental divide, it was thought better to have a fairly good-sized balloon.

The South St. Louis Aero Club has been organized at the grounds of M. A. Heimann, Fourteenth and Rutger Sts.

The officers are Charles W. Nugent, president; Charles F. Wenneker, first vice-president; Sheridan Webster, second vice-president; William Fox, third vice-president; William Fox, secretary, and Henry Nuen, secretary.

The executive committee consist of George Fehl, Eugene Ringler, C. C. Nichols, David McArthur, M. A. Heimann, Andrew Drew, Louis Shelke, J. Oheim, J. J. Parker, Vital Garesche, Herman Shapiro and John Berry.

A publicity committee, consisting of George Belcher, M. A. Heimann and H. C. Nuen, was appointed.

The International Aeroplane Club of Dayton, O., has grown to over 500 members. The charter list closed July 28, and the club is to be incorporated within the next few days.

The Aero Club of America is still uncertain as to the location of its grounds, to be somewhere on Hempstead Plains. Committees have from time to time visited the Plains for the purpose of selection, but have come to no definite decision.

The **Edwardsville Aero Club** is about to be formed at Edwardsville, Mo., by Dr. Geo. C. Schwarz, who has offered the use of grounds for ascensions and a hydrogen plant is suggested.

The Phila. Aeronautical Recreation Society.—On July 13th a "cup party" was given at the home of Miss Margaret Tourison, the winner of the Eldridge-Simmerman Cup. Miss Tourison made a trip of 51 miles on July 3rd. All the members of the society who were in the balloon at the time the cup was on were present. Mrs. Lockington, the previous holder, made a pretty speech, telling how it was such a "painful pleasure" to part with the cup. The assemblage then supped from the cup a very rare vintage, preceding a dainty collation presided over by Miss Tourison.

On Saturday, Aug. 14, a complimentary ascension is being given to the officers of the Baron de Hirsch School at Woodbine, N. J., Henry William Gellor and Miss Lydia Cantor, by Dr. Thomas Edwin Eldridge and Dr. Geo. H. Simmerman, president and vice-president of the P. A. R. S. Upon two different occasions during the past season boys from the Hirsch school have received balloon parties of the society, and because of the generous reception given them Mr. Gellor and Miss Cantor are the invited guests, as public recognition of the society's appreciation. Mr. Gellor has been made an honorary member and Miss Cantor an active member. The ladies of the society will present Miss Cantor with an appropriate souvenir. Dr. Eldridge and Dr. Simmerman will jointly look after the guests during the trip.

The International Dayton Aeroplane Club had an extremely interesting meeting in their permanent quarters on the evening of July 28. About 125 were present. 122 applications for membership were received, bringing the membership list above 500.

The Committee on Constitution and By-Laws submitted a draft which, after a general discussion, was approved and adopted.

Mr. G. Harris Gorman, vice-president of the Davis Sewing Machine Co. and a member of the club, gave a very interesting address.

Dr. L. E. Custer, who some time ago was granted a patent for a steering device which can be utilized either on submarine torpedoes or other craft, or on dirigible balloons, by means of what is commonly known as the Marconi wireless system, exhibited a working model of the device and demonstrated the value of utilizing the "Hertz" ether waves for accomplishing this. His address throughout was intensely interesting, and the discussions which followed it clearly demonstrated the vast possibilities of this, as yet unexplored field.

Mr. Howard L. Burba, of the Dayton *Journal*, gave a most interesting talk of his experience in his recent balloon trip by night, in the balloon "Hoosier," in company with Col. McClellan, editor of the Dayton *Journal*, Capt. B. F. Wendler, G. W. Shroyer, and Pilot-Capt. Bumbaugh, during which he set up in type a short account of their trip and printed a miniature edition, which was distributed from the balloon along their route

An interesting episode was that towards morning the air became so heavy and damp, and the lowering temperature so reduced the buoyancy of the balloon that they were forced to throw overboard all available ballast until there was nothing left but the toy printing press and the type. Burba tenaciously held on to the press, but finally permitted them to throw out the form and all the type, when the balloon rose sufficiently to clear the hills which they were approaching. Many other amusing incidents were related.

The president authorized the chairman of the balloon committee to extend an invitation to Capt. Bumbaugh of Indianapolis to deliver an address at the August meeting, on "How to Judge Distances from the Balloon." Other speakers will also contribute to the program at that time.

The officers have received definite assurances of the delivery of an aeroplane from the representative of the Messrs. Wright; the one now in the course of completion will be shipped to the son of General Alger.

Dr. J. M. Gibbons, St. Lawrence Park, Thousand Islands, N. Y., is forming an aero club, to be limited to the members of the motor boat club. Fifty members have already given a start to the movement.

News In General

Motor Boats to Chase Balloon.

The Colonial Yacht Club is sending out invitations to all the yacht clubs within a hundred miles of New York to take part in a balloon chase. A. Leo Stevens will pilot one of his balloons from the gas plant at 155th Street, and at the moment of leaving all the clubs will be notified by telegraph. A silver cup will be awarded to the member of a yacht club who first arrives at the balloon on its landing and hands a specially provided card to the pilot of the balloon.

Any means may be taken to catch up, whether by auto, boat, or on foot. Thirty members have already entered their names as "hounds." Landing will not be made when water is sighted, but the aeronauts will continue on, assured of the assistance of the many motor boats which will be waiting or following.

This will prove an exciting event, and motor boats all around New York are getting their batteries recharged and everything shipshape for the event, which takes place the second week of September.

Smithsonian's Aero Bibliography.

Washington, D. C., Aug. 9.—A Bibliography of Aeronautics has been prepared by Mr. Paul Brockett, assistant librarian of the Smithsonian Institution, which goes to press during the present week. This bibliography has been prepared in order to make available the material in the aeronautical literature at the Institution. Special effort has been made to make it as complete as possible, and it includes papers in all languages and has about 16,000 references. In addition to the citations made from available publications in Washington, bibliographies and lists of various kinds have been consulted. No special attention has been paid to securing titles of fiction, poems, music and the drama based on the subject, nor have newspaper clippings been included. The dictionary form of arrangement has been used, and while a classification of aeronautical literature has not been attempted, there are ample cross-references for such subjects as may prove of interest to the investigator pursuing any particular line of work. The date of the publication cannot now be given, but the printing will be done as speedily as possible.

To Double a Motor's Horsepower.

Of particular interest to those building is the news that there will soon be on the market a remarkable motor, especially adapted to aeronautics. Hugo C. Gibson, an automobile engineer, has devised and patented a system for doubling the possible maximum horse power developed by a normal four-cycle engine so as to produce a greater mean effective pressure at a high speed of revolution. Thus, a "regular" 25-horse power motor would be developing twice that power at the same weight.

This motor will soon be brought out by the Requa-Coles Co., 206 Broadway, New York, of which Mr. Gibson is consulting engineer.

New Patent Decision.

An interesting decision is rendered by Commissioner of Patents Moore, under date of June 25, 1909, in the matter of a pending application for patent of R. M. Viniello for an airship. The primary examiner rejected the claims on the ground that the device sought to be covered is inoperative and required a demonstration of operativeness, which should have been complied with within a year; instead of which applicant files an argument to show operativeness and utility, which was held irresponsive by examiner and accordingly application was regarded as abandoned.

Commissioner's present decision restores application to pending files and directs examiner to give full action on the merits of the case, so that all questions involved can be appealed to the next higher court — namely, examiner-in-chief—and not consider the points piecemeal in such manner that applicant would have no right of appeal in any disputed point.

Goodale Repeats N. Y. Performance Over Newark.

During his engagement at Newark, Frank W. Goodale made another sensational airship trip over the streets of a city, this time over Broad St., Newark. The success of the trip was marred, unluckily, by the forced landing on account of the gasoline tank working loose.

From Submarine To Airship.

Christopher J. Lake, of Bridgeport, father of Capt. Simon Lake, inventor of the Lake submarine boat, is at work on an apparatus of his own design and has secured an option from Stephen C. Osborne, owner of Hippodrome park, where the new flying machine is to be built and tested. Several men are now at work there to carry out the ideas of Mr. Lake, but their work is enshrouded in complete mystery, no one being privileged to give out any information in regard to it.

The Highest Balloon Ascension in America.

In correcting a recent statement made in a New York newspaper, Prof. A. Lawrence Rotch stated: "The late Professor H. A. Hazen of the United States Signal Service, with three companions, rose from St. Louis to a height of 15,400 ft. in the year 1887. Professor Hazen was a trained meteorologist, and his calculation of the height attained is no doubt more trustworthy than a simple reading of the aneroid barometer, which usually requires a negative correction to be applied to the scale of feet, on account of the temperature of the air.

Patent List.

Lafayette J. Brown, Oaklyn, N. J., No. 926,804, July 6, 1909. Flying machine of the helicopter type. Two propellers rotating on vertical axes provided at top of a vertical frame, are composed of rims secured to hubs by spokes and the blades consist of air-tight fabric to act as aeroplanes as well as propellers.

Percival V. Wadleigh, Needles, Cal., No. 926,913, July 6, 1909. Flying machine consisting of combined orthopter and aeroplane. The body is provided at each side with pivoted wings composed of hinged slides or shutters which "feather" on the up stroke.

Matthew B. Sellers, Baltimore, Md., No. 927,289, July 6, 1909. Flying machine. More properly an aeroplane composed of a plurality of superposed planes in step-form, each in advance of the next lower one. The rear edges are constructed to tilt for regulation and control.

John Seiler, Union Hill, N. J., No. 927,605, July 13, 1909. Aeroplane consisting of cylindrical open frame work provided with planes stretched at various points and angles on the frame.

Ludwig Ruppin, Lancaster, Pa., No. 927,815, July 13, 1909. Aerial device combining a transversely corrugated member acting as a plane. A counterbalancing weight at one side of the center of gravity and a rudder blade at the other side of said center.

Simon Lake, Bridgeport, Conn., No. 928,524, July 20, 1909. Airship. Gas bag designated a hollow body section. Aeroplanes supported thereby and propellers arranged upon each side. Elevating rudders arranged both front and rear of the propellers. Vertical rudders at rear of body section. Means provided for controlling positions of all rudders. Car section, as usual, below.

Frank H. Newell, Terry, Mont., No. 928,687, July 20, 1909. "Aeroplane airship." Details of construction not clear from claims and illustration in Patent Office Gazette. Apparently a combination of aeroplane with airship, the principal novelty of which is the application of wings having larger concave curvature at inner portion and smaller convex curvature at outer end.

Oscar Heeren, Paris, 929,217, July 27. Aeroplane. The characteristic features are a supporting plane consisting of two outer wings or planes extending from a central axis on which they oscillate to change the angle of incidence. Two smaller inner wings fill the space near the center which is open in the outer wings. Inner wings operated separately and operated by articulated arms.

Charles J. Berthel, Pinetown, N. C., 929,378, July 27. Airship consisting of an open ended tube provided with lateral wings extending therefrom at each side. A propeller is provided at each end of the tube; vertical and horizontal rudders at each extremity.

Francisco Fronz, Gorizia, Austria, 929,298, July 27. Paddle wheel, particularly for use on airships. Consists of paddles caused to feather by means of a stationary pivot to which they are attached eccentrically disposed with respect to the pivot of rotation.

Anton A. Zalondek, Oklahoma, Okla., 929,302, July 27. Flying machine of the orthopter type, comprising front and rear wings consisting of a series of blades caused to open on the up stroke and close on the down. Intermediate of the wing sections is an aeroplane surface.

Incorporations.

The Bostel Airship Co. of Cleveland, capital, $25,000. Incorporators: Carl Bostel, Frank E. Dellenbaugh, Allen Diemer, John W. Farley and Thomas S. Fleming.

The Scientific Aeroplane and Airship Co., New York; capital, $50,000. Incorporators: H. C. Beach, W. A. Hayes, H. C. Evans.

F. I. A. T. Co. of Poughkeepsie; capital, $2,000,000. Incorporators: E. R. Hollander, Joseph A. Strauss, Albert E. Schaaf, S. K. Lichtenstein, William F. Ashley, Henry M. Wise and Henrie Neuhauer.

Aeronautic Exhibition Co. of New York; capital, $7,000. Incorporators: Thomas A. Hill, C. F. Blackmore, Lee S. Burridge.

N. Y. Aerial Mfg. & Navigation Co., Brooklyn. Cap., $25,000. Incorporators: G. E. Tinker, J. W. Hughes and F. Francis.

Trade Notes.

MARINE MOTORS FOR AERONAUTICS.

In a hunt for suitable and low-priced motors for flying machines, inventors have turned to the 2-cycle marine engine people. The latest instance of this is in connection with the Elbridge Engine Co., of Rochester, N. Y., who have never considered their engines in connection with aeronautics until they began receiving inquiries from inventors. During the past few weeks, their factory has been visited by several people, and in each instance the result of the visit was the placing with them of an order for an engine to be used in aeronautical work.

U. & H. MAGNETOS ON NEW ANTOINETTE MOTORS.

Voison Freres, of France, builders of the famous "Farman" aeroplanes, have just completed and delivered two more machines, propelled by eight-cylinder Antoinette motors of 55 h. p., the propeller being attached directly to the crank shaft, and using a special, eight-cylinder U. & H. high tension master magneto for ignition. The magnetos themselves weigh only about six kilograms each, or 13.2 pounds, the total weight of the motor being only about 265 pounds. The first meter of this light type fitted with the U. & H. master magneto gave entire satisfaction, and led to the ordering of a second magneto.

It is said that the Wright Brothers while abroad carefully examined the U. & H. high tension magneto system used on these motors, and it is expected that they will have occasion to use one of these magnetos very shortly in their experiments, a magneto of this style now being on the way to this country for this very purpose.

The new motors present marked difference in design from the Antoinette creations of previous years. The cylinder and head containing the valves are cast separately and in two pieces, it being found an advantage to use this construction, as it made machining easier and a considerable degree of lightness obtained. The new motor departs radically from the former design, in that the cylinder and valve chamber form a single piece, which makes for an entire absence of joints in the construction. This piece is of steel, but owing to the difficulty of securing a light steel casting, which would have uniform wall thickness, a drop forging is employed. The cylinder is machined inside and cut. The valves are placed one above the other in the chamber, the inlet valve being automatic and the exhaust valve mechanically operated from a single cam-shaft located in the top of the crank-case between the cylinders. The exhaust pipe extends upward, while the inlet pipes are simply short vertical elbows to each of which a small copper tube is attached, extending to one or the other of the plunger pumps, which serve to inject the fuel to the portion of the cylinders over the inlet valve, in this manner dispensing with a carburetor. These pumps are operated by variable throw eccentrics, and the stroke can be varied by a simple control wheel. The speed of the motor and amount of gas inspired can be changed by varying the fuel supply. The water jackets are of copper, and in the separate head construction are mechanically applied, while with the single piece cylinder they are deposited by electrolysis, there being no joints.

STEVENS SELLS WESTON BALLOON.

A. Leo Stevens has sold to E. B. Weston, Dayton, O., a 56,000 cu. ft. balloon to be named the "Delight," after Mr. Weston's daughter. Delivery is promised about August 20.

Correction.

"Dear Sir:

"In your last issue it is reported that owing to the lateness of the train which brought the Wright Brothers to London on the occasion of their last visit, there was no one present to give them an official welcome.

"As this would look as though we in the Aero Club did not take much interest in the arrival of such distinguished men, I would like to point out that the report is incorrect and that several members of the committee of the Aero Club were present to welcome Messrs. Wright at Charing Cross station on their arrival, and also to bid them farewell on their departure from Waterloo station.

"Yours truly,

(Signed) "THE HON. C. S. ROLLS."

Encouraged by the success with the Williams helicopter, recorded last month, Messrs. Berliner and Williams will build, though separately, a new apparatus, which is expected to actually fly. It is suggested that a successful helicopter must be a compromise, based purely on empirical experiments, and very little on mathematical theories, which can only be applied after full development of the practical machine.

The aeroplane which is being built for E. L. Thomas of Buffalo on designs of George Francis Myers of Hammondsport is about finished. It was erroneously stated last month that this machine was for E. R. Thomas.

William Van Sleet, of Pittsfield, Mass., who has made more than 35 balloon ascensions since he started in two years ago, is reported as building an aeroplane.

Mr. W. L. Marr of the Buick Motor Co. is building an aeroplane and a special motor.

FOREIGN NEWS LETTER

New World's Duration Record—Flies With 10 h. p. Motor—Record Cross Country Flight—Farman, Tissandier and Paulhan Make New Records in Over Hour Flights—New French-Dirigible on Long Trip—Zeppelin I Again in the Air—Record Month in Aviation—French Aviation Meets Drawing Crowds at Juvisy, Vichy and Douai—Many Bleriot Machines Ordered—Australian Prize Fund.

Australia.

The Australian Minister of Defense has put up a prize of $25,000 for an Australian made aeroplane suitable for purposes of military defence. The Australian Aerial League is to add a further $25,000.

England.

Cody has made some slight alterations in his controls, and on July 20th succeeded in making a flight of four miles over the Laffan Plains. He has, however, not entirely overcome the great tendency of his machine to undulation.

Baron de Forest has offered a prize of $20,000 for the first British-made machine that crosses the Atlantic.

Sir W. Hartley has put up $5,000 for the first flight from Manchester to Liverpool.

S. F. Edge, of the Napier Motor Co. and Napier motor boat, in each of which a few years ago he figured as one of the pioneers of daredevil driving, has offered to build the English nation a satisfactory airship for a guarantee of $60,000 to cover out-of-pocket expenses.

One of the largest "polytechnics" in London, the Northampton Institute, in Clerkenwell, has entered aeronautics on its calendar. Beginning with its next session, which opens in September, it will commence a four years' course.

It is proposed to establish a school of flight at Portsmouth which is a great naval and military centre. One of the most active spirits in the movement is Patrick Y. Alexander, one of the best known patrons of aeronautics in the world.

A. V. Roe has been able to make some 300-yard flights on Lea Marshes with a 10 h. p. J. A. P. motor, driving a 7 ft. 4 in. propeller.

HARE AND HOUNDS BALLOON RACE.

In competition for the cup which Hon. C. S. Rolls offered, six balloons entered, at Hurlingham, July 17, as "hounds," Mr. Rolls using his "Imp" as the hare, piloting himself. Three of the competing balloons were owned by ladies. After two hours and ten minutes of travelling Mr. Rolls brought his balloon down, followed quickly by Mrs. Assheton Harbord's "Valkyrie," pilot C. F. Pollock, 70 yards away. A. M. Singer did a little better with his "Satellite," landing within 12 yards of the hare balloon, thus winning the cup as the nearest hound.

France.

BLERIOT FLIES NEARLY AN HOUR—MAKES RECORD CROSS COUNTRY FLIGHT.

Louis Bleriot.—After returning to Paris from Douai, where we left him last month, he flew the "XI" at Issy on June 30th, going to Douai again on July 2 to win a prize with the "XII." On the 3rd he flew 5 kms., and then made one of 47 min. 17 sec., covering 47.27 kms., further flying stopped by motor trouble.

On the 4th at Juvisy, in the "XI," he was well on his way to a new monoplane record when the gas gave out after flying for 50 min. and 5 sec.

THE CROSS COUNTRY FLIGHT.

On July 13th, early in the morning, Bleriot started at Etampes on an officially observed cross country flight for the Prix de Voyage of the Aero Club of France, the conditions of which allowed an intermediate landing. Starting at 4.44 a. m., he flew over trees, wires, railroad train and villages to a voluntary landing near Barmainville at 5.40. The officials started him off again after a little wait. Toury was the next place passed, then Chateau-Gaillard, Dambron, Artenay to the selected spot at Chevilly, near Orleans. The distance figured 41.2 kms., and the net time 44 min. 30 sec.

By this flight Bleriot won $1,000 as pilot, $800 as constructor, Anzani $600 as maker of engine, and Chauviere $400 as builder of the propeller. Half of the money has been paid and the other half becomes available if the record is not beaten before January 1 next. After the flight, it took but 35 minutes to dismantle the machine and start it on its way to the Bleriot factory.

In a speed trial at Douai on the 18th, his best time was 2 min. 29 sec. for 2 kms., while on the 8th he was able to make it in 2 min. flat.

Bleriot has undertaken to build 36 machines on order by November 1, at $2,000 each. Alfred Leblanc gets the first.

I HOUR 23 MINUTES FOR FARMAN.

Henry Farman has jumped to the fore again, beating all his previous records in an

1 hr. 23 min. flight at Chalons on July 19, late in the afternoon. On the 21st he took up M. Cockburn, the Englishman whom he is teaching to operate the flyer he has purchased from Farman, for 3 kms. The total weight of the occupants of the machine, with gas, was 206 kilos., for the 50 sq. m. of surface. The power is 50 horse. On the 22nd Farman made a 15 minute cross country flight, and Cockburn got so he could fly for 11 kms. Then on the 29th he flew 22½ min.

ROGER SOMMERS NOW AT THE TOP—MAKES NEW WORLD RECORD.

Roger Sommers, the latest in the field, began his trials at Chalons on July 3rd with three good flights of 2-3 kms. in a circle with his Farman machine. The next day he increased his time to 30 mins. After flights of 15 and 19 mins. on the 13th, and 27 and 12 mins. on the 15th, 30 mins. on the 17th, he flew for 1 hr. 4 mins. on the 18th. More flights up to 18 mins. on the 20th, while on the 22nd he jumped to 1 hr. 5½ mins., followed by one of 38 mins. On the 28th he beat Farman himself by flying 1 hr. 23 mins. 30 sec.

On August 7th Sommer wrested from Wilbur Wright the laurels gained in his record flight of 2 hrs. 20 min. on December 31 last, by flying 2 hrs. 27 min. 15 sec. The moon was still shining when he started on his early morning flight.

When he had been up two hours there was a demonstration by the few spectators who had gathered. Soon he equaled the Wright record, but he made no move to descend until his superiority was beyond dispute. When at last the machine touched the ground at a quarter to six he was seized and carried off the field in triumph, stiff with cold and fatigue, but otherwise none the worse for his exploit.

Sommers took his seat in an aeroplane for the first time on July 3. Since then he has been flying daily on the Chalons moors, gradually increasing his distance. He first came into prominence July 27, when he made a flight of 1 hr. 23 min. 30 sec.; this at once ranked him among the most prominent aviators. On August 2 he remained in the air 1 hr. 50 min. 30 sec. August 4, his thirty-second birthday, he celebrated with a flight of 2 hrs. and 10 sec. This is "going sum."

On the 8th, after a short flight, he stopped the motor too soon and landed roughly, damaging the machine.

That he is almost a thorough master of his machine is shown by the fact that on one occasion he made a moonlight flight of ten minutes with Chinese lanterns hanging from the corners of his aeroplane, and a cross country flight.

The meeting at Vichy, with $6,000 offered in prizes, July 18-25, proved rather a fiasco, and ended in disaster through a terrific storm which blew over the grand stand and damaged several machines. During the week the only aviators who met with any success were Tissandier and Paulhan. Tissandier on a Wright took the Grand Prix de Vichy with 20 km. in 23 min. 29 sec. The race across the River Allier on the 21st resulted in a close contest between Tissandier and Paulhan, the latter doing the 2.5 km. across the river and back in 5 min. 1 sec., beating Tissandier by only 2-5 of a sec. During one of Paulhan's attempts at crossing the stream something went wrong while over the water; but he managed to alight on an island. In the prize for the greatest aggregate of time in the air, Tissandier, with a total of 1 hr. 23 min., beat Paulhan by less than 2 min. For the fastest time over a circuit of 1.666 km., Tissandier won in 1 min. 52 sec., beating Paulhan by 27 sec.

Delagrange has been taking lessons at Juvisy from Count Lambert on the Wright machine, after the latter's return from exhibition flights in Holland. Delagrange talks of attempting to fly the Wright across the Channel.

M. Demanest was out at Chalons on July 9 in the "Antoinette IV," and on the 11th made a couple of flights of 16 min. duration each. In the second one a sudden gust of wind struck him heavily down, and the machine was much damaged.

THREE IN A VOISIN BIPLANE.

Beginning with short flights the end of June, on July 3, *M. Jean Gobron*, at Chalons, made at once a sensational performance and a novel record in his Voisin machine. He took up two passengers together, one of whom was a lady. They were Mme. Colliex and d'Almeida. The trip lasted 5 min., and was at a height of about 5 m.

On July 9th Gobron won one of the Aero Club de France 500 m. prizes, flying 5 minutes. On the 11th he increased his time to 10 min. On July 13th he was up at Chalons 7 min. in a 20 km. breeze. He was entered for the events at Rheims, and will at least put up a good showing against Bleriot in the passenger-carrying contest.

Paulhan.—In France more encouragement is given short flights than in America, it appears. For instance, Louis Paulhan, formerly one of the mechanics of the "Ville de Paris," who is flying a Voisin fitted with a 7 cylinder 80 h. p. Gnome motor, made many flights before he attempted to stay up any length of time, yet his flights were duly chronicled as great successes. At Douai, July 10th, he managed 2 kms., and on the 13th ran up to 15 min., repeating this the following day. On the 15th he added his contribution to the sensational

ONE HOUR SEVENTEEN MINUTES.

flights of the month by remaining continuously at a comparatively good height for 1 hr. 17 min. 19 sec., over an official distance of 47 kms. On the 18th he beat Wright's height record (110 m.), clearing by a wide margin a balloonette at 120 m. altitude. The next day he added a cross-country flight to his accomplishments, covering 20 kms. in 22 min., from Douai to St. Nicholas, making an intermediate stop about a kilometer out to adjust the carbureter. On the return from St. Nicholas the wind freshened and the motor began giving trouble. The landing was rough, in a barb wire fence, damaging the machine somewhat. Paulhan in his Voisin and Bleriot in his monoplane had a little brush at Douai, Bleriot doing best for the kilometer in 1 min. 9 sec., Paulhan doing it in 1 min. 37 sec.

"De Rue" (Capt. Ferber), at the July 4th meet at Juvisy, captured the second of the La Gatinerie prizes of $500 for a 3 km. flight at Juvisy; the first was won by Bleriot. De Rue made the 3 km. in 3 min. 47 sec., which was 12 sec. better than Bleriot's time. Other events were a hot air ascent and towed flights. It is now an open secret that the name of De Rue covers the identity of Capt. Ferber. The captain has been practising with a 50 h. p. Voisin during the past months, but has made only short jumps. After making short flights at Douai, he went to Belfort, continuing short flights.

There are apparently some enthusiasts in France who, however, hesitate at the high speed of the aeroplane. One of them has anonymously given a prize of $200 to the Aero Club for the production of a low speed machine.

The Ligue National Aerienne, which has control of the Weiller $200 for the defeat of Wilbur Wright's height record, has decided that competitors must clear a balloonette anchored at a height of 110 m.

During military manœuvers at Longchamps, July 14, the dirigibles "Ville de Nancy" and "Republique," advancing from opposite directions, took part in the manœuvers.

A long trip was made by the "Ville de Nancy" from Paris to Nancy on the 16th-18th. One descent was made on account of a damaged propeller. Another forced descent was made to reinflate with hydrogen. During the last stage of the journey 175 miles were made in 5½ hours.

The "Ville de Nancy" was constructed by the Societe Astra. The volume is 3,300 cu. m., 10 m. in diam., 55 m. long. A 1,000 cu. m. balloonette is provided, and there are in the rear the four appendages as in the Clement-Bayard, of which this new ship is practically a duplicate. The motor is a Bayard-Clement, 115 h. p., driving a Chauviere "Integral" propeller in the front end of the tubular frame.

After arriving at Nancy practice ascents were continued.

The new French military dirigible, "Col. Renard," began its trials July 14 at Meaux.

The Aeronautique Club de France has organized monthly gliding competitions, using its school's glider.

During October the Aero Club de France will organize an event at the Juvisy flight course, with $1,000 in prizes.

The "Republique" made a 130 mile journey from Chalais-Meudon on August 4, lasting six hours.

At Issy, on the 21st, Fournier, in his Voisin, made six flights of about 6 kms. each. Capt. Burgeat in his Antoinette made some short flights.

The same day Colliex made a circuit of the course in his Voisin.

The School of the Ligue Nationale, at Juvisy, has not yet produced any aviator of mark, but it looks as if M. Gaudart, one of the latest students to be heard from, will do well. After quite a few lessons he managed to circle the track three times, and that in a wind so gusty it eventually blew him down. By August 1 he improved so he could fly 7 min. for the benefit of Bleriot.

Alfred Leblanc, the famous balloonist, has begun trials with his Bleriot, a copy of the "XI."

Count de Cournet, whose first experience with the Delagrange machine was recorded last month, has now got acquainted with his Voisin biplane, and was about to circle the Juvisy course with ease.

Germany.

A company with a capital of $250,000 has been formed on Frankfort-on-Main under the auspices of the Disconto Gesellshaft of Berlin to work the new patents of the Dellwik-Fleischer Hydrogen Co., and it is believed that hydrogen of 99 per cent. purity will be produced at a price of 4 cents per cubic metre by the new plant which this concern will put upon the market.

The military "Zeppelin I" is now completely repaired after the accident mentioned last month, and on July 3 the trip was continued to Metz. Count Zeppelin issued a statement calling attention to the fact that, the ship being now nearly four years old, the covering is not now entirely waterproof, though it has until of late withstood heavy showers. Ascents were then made at Metz. The Zeppelin I. the old "III" of 1907, modified and elongated, is the fifth airship built by Zeppelin. The count has been negotiating with the Prussian railroad administration for a working arrangement between his proposed airship passenger lines and he suggests that the depots should be enlarged so as to afford shelter for the dirigibles.

On its third attempt to reach Cologne from Frankfort the Zeppelin II was successful, and arrived on August 5, after having been delayed by unfavorable weather. The big airship left Frankfort, cheered by a crowd of 50,000 people. Its progress was reported by telegraph as it sailed down the Rhine. At Limburg, Neuweid, Remagen and Bonn great throngs assembled to watch it. As it approached Cologne, however, it ran into a thick fog and went off its course some ten miles to the southwest. At Dueren it got its bearings again and headed straight for the city. After circling the tower of Cologne cathedral it made a safe landing at Bickendorf, a suburb. The distance between Frankfort and Cologne in a straight line is 110 miles, but the airship covered considerably more than this. Its average speed must have been about 25 miles an hour.

The Zeppelin II flew from Friedrichshafen to Frankfort on July 31, a distance of 220 miles, with Count Zeppelin himself at the helm. On August 2 it made its attempt to reach Cologne, but when within 30 miles of its destination was forced back by strong head winds. On August 3 the ship went but a short distance when two of its propeller blades came off.

The Zeppelin II has been acquired by the War Department, and is to be stationed at Cologne.

Berlin, Aug. 5.—The military dirigible "Gross II" returned here at three o'clock this afternoon after a flight to Halle and return. The distance, 217 miles, was covered in 15 hours and 40 minutes.

Holland.

M. Lefevre has been experimenting at The Hague with a Wright bought in France. His longest flight so far has been 3.5 km.

Italy.

L. Calderara has, on the advice of his doctor, given up flying. He suffers from some heart trouble. But before giving up he made a flight of 40 m. in the Wright machine during the first week of July, and showed that neither his accident nor his weak heart affected his nerve and skill.

A new dirigible has had its first trials. It is 130 ft. long, 78 ft. diam., and the speed is stated as 30 m. p. h.

BLERIOT CROSSES ENGLISH CHANNEL

The dates July 19, 25 and 27 will ever remain monuments of progress, for on these days attempts were made to fly across a large body of water, one of them resulting in complete success.

Three aviators had been waiting on the French shore of the English Channel for a favorable moment to fly to England. There was Hubert Latham, a newcomer in the public eye, with his Antoinette IV monoplane installed at Sangatte, near Calais; Count Lambert, in his Wright biplane at Wissant; and Louis Bleriot, in his own monoplane at Les Baraques, near Calais.

The French government had placed fast torpedo destroyers in the Channel ready to follow the aviators at any moment, and the Marconi Co. had established wireless communication between Sangatte and a hotel in Dover.

The attempt for the *Daily Mail's* $5,000 prize was made by Latham on the 19th, and resulted in a splendid non-success. After many days of weary waiting, the weather was at last propitious. At 6.48 a. m. the start was made, running down the slope at Blanc Nez. After going six or eight miles the engine began misfiring, and at last stopped altogether. At the moment of its stopping Latham was a thousand feet high, but he glided safely down to a wet "landing," the machine striking the water at good speed and floating. In the interval before the boats reached him, perfectly dry, Latham calmly lit a cigarette and fixed himself for a wait. The machine was later hoisted on a tug and the return made to Calais. The same evening Latham left for Paris to get another machine, the 100 h. p. "Antoinette VII," and the next night it was on its way. The new machine is identical, except for its slightly increased surface.

BLERIOT'S WONDERFUL FEAT.

On the morning of July 25th Louis Bleriot flew across the English Channel from Calais to Dover, England, in his monoplane, and won the $5,000 prize. The distance is about 31 miles, and he was in the air thirty-seven minutes. The flight was accomplished without incident, and apparently with the greatest ease.

Bleriot left the Terminus Hotel, at Calais, at three o'clock in the morning and drove out in an automobile to Baraques, where his aeroplane was housed. As the weather seemed favorable, he notified the torpedo boat which the French government had assigned to him, and began preparations for the flight. The aeroplane, which is Bleriot's eleventh, was found in good condition; the motor ran smoothly and powerfully. At four o'clock he mounted his seat and made a short trial flight of a quarter of an hour, landing near the edge of the cliffs. There he waited for the sun to rise. The weather was foggy, so that the coast of England could not be seen, and there was a light southwest breeze.

At 4.30 Bleriot, clad in a khaki suit with a close-fitting cap, again climbed into the car. Anzani, the designer of the motor, himself cranked it, and at 4.35 the aeroplane shot into the air. Bleriot rose rapidly to clear the telegraph wires strung along the edge of the cliff, and sailed out over the water at an elevation of about 250 feet.

The torpedo boat put on full steam and headed for Dover, but Bleriot, making over forty miles an hour, quickly passed it. In his own story, printed in the London *Daily Mail*, he says that after flying for about ten minutes the chalk cliffs on both sides and the torpedo boat were completely lost in the fog, and as he had no compass he was compelled to let the aeroplane take its own course. As a consequence the wind took him out of his way, and when the English coast became visible he made out Dover Castle far to the west. He had to turn the machine almost at right angles. Now, too, the air currents set up by the cliffs began to be troublesome. This was by far the most difficult part of the trip.

However, he reached safely a green meadow two miles east of Dover, which had been marked with a big French flag as a suitable landing place. A sudden wind whirled the machine around, and Bleriot shut off the motor and descended sharply from a height of sixty-five feet. He struck the ground with a severe bump, breaking the propeller, but without harm to himself. Two Frenchmen who had been expecting his arrival were the first to welcome him and to help him from the machine. An automobile quickly took him to Dover, where the torpedo boat, with his wife on board, had just hove in sight. Mme. Bleriot came ashore in a small boat, and the couple were heartily cheered.

A guard of police was necessary to protect the aeroplane from souvenir hunters, who would quickly have wrecked it and carried away the last fragment. As it was, the wings were covered with autographs. Soon the enterprising city officials erected a tent over it and charged sixpence admission.

Bleriot and his aeroplane reached London on the 26th, the aeroplane to go on exhibition and the aviator to receive the £1,000 prize of the *Daily Mail* which he won by his flight. The prize was awarded at a luncheon at the Savoy, and Mr. Haldane, the Secretary for War, was the principal speaker. The Aero Club has decided to present M. Bleriot with a gold medal similar to that which it conferred on the Wrights. M. Bleriot received his honors modestly, and managed to stammer "Thank you" in English.

The manufacturers, of course, come in for their share of the honors. Anzani motor, Continental cloth, Bowden wire control.

LATHAM'S SPLENDID SECOND ATTEMPT.

Hubert Latham, whose gallant attempt to cross the Channel prepared the way for Bleriot's successful trip, was caught napping, literally as well as figuratively, and lost by a few minutes his chance to tie with Bleriot for the *Daily Mail* prize. The two aviators had agreed that if both made the flight the same day they would divide the prize, regardless of which was actually the first to touch English soil. When on the morning of the 25th he found that Bleriot had actually started, he made a desperate attempt to follow, but the rising wind compelled him to descend. He swallowed his disappointment as best he could, and when the news of Bleriot's landing was flashed across to Calais he sent back the message: "Hearty congratulations. I hope to follow you soon."

True to his word, Latham made a second trial on July 27, and moreover announced his intention of continuing straight on to London if he succeeded in crossing the Channel. A great crowd gathered on the cliffs and roofs of Dover when the wireless announced that he had left Calais. Presently those with glasses made out a black spot in the sky, approaching rapidly. It was Latham, and he seemed headed straight for the landing place that had been prepared for him. The ships in the harbor set up a terrific din with their whistles. But suddenly the machine faltered, recovered for a moment, then settled swiftly down on the water, still two miles from its goal. Instantly the sea was alive with all sorts of craft to the rescue. The aviator was picked up, wet through and with a cut caused by his goggles breaking. The cause of the failure was the motor, which stopped for no apparent reason.

The aeroplane easily floated, though a little down at the head. The following day it was towed to Calais and hoisted out by cranes.

FLYING ASSURED FOR HUDSON FULTON

Hon. James M. Beck, former Asst. Atty. Gen. of the U. S., Chairman of the Aeronautic Committee of the Hudson Fulton Celebration Commission, has returned from Europe where he has been negotiating for flights in New York by the most prominent foreign aviators. MM. Bleriot, Delagrange and Latham are willing to come provided satisfactory financial inducements are offered.

While Mr. Beck was abroad, Mr. Hammer, the Secretary of the Committee, has been industrious and has secured Curtiss' signature to a contract. Then, too, the Wrights, while no promise has been made by them and though they have turned down every request and proposition for flights here thus far, it is believed, look with favor upon the request of the Commission and if not interfering too much with their own plans, will consent to take part.

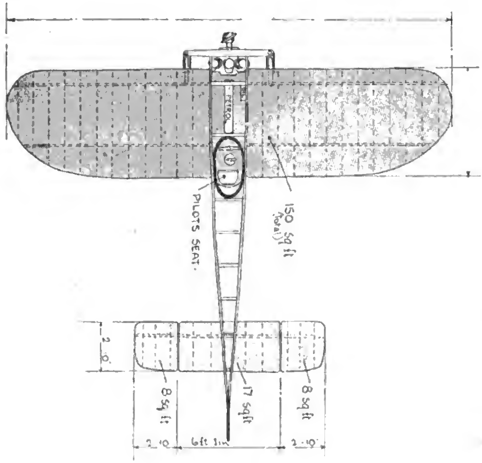
In the proposed plan, the Wrights and Curtiss will not enter into competition at all but make purely exhibition flights. They may, however, elect to enter the international competition which is proposed.

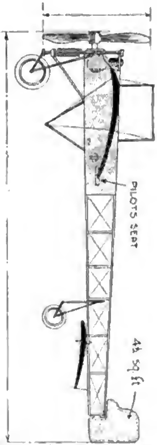
Chas. F. Willard will, by that time, be making long flights and can be considered as another big feature. It is not at all unlikely that such flights as are made will be somewhat sensational.

Dr. Julian P. Thomas is working on a marine "windwagon" of greater power than the one he had at Morris Park which made 30 miles an hour. This will be used in the naval pageant.

It is expected that a number of American dirigibles will take part. The expense connected with the securing of any of the great foreign airships was found too great.

The aeronautical features of the celebration will, with one exception—the New York *World's* N. Y.-Albany flight, which is under the control of that paper and the Aero Club of America—be in charge of the commission itself and all aero organizations are asked to co-operate towards making the affair a success.





From "Flight" Jul 31, '09

THE BLERIOT XI.

The Bleriot XI has been changed considerably since the description given in the March issue. The surface has been increased and the motive power changed from the R. E. P. 35. Its characteristics are as follows:

Planes.—The spread of the machine is 25.38 ft., with 150.5 sq. ft. surface. When first built it had but 129 sq. ft. The wings are composed of single members, independently detachable from the chassis, set at a slight dihedral angle. The main cross beams measure, in cross section, about 3 by ¾ ins., and the ribs, about ¼ in. cross section, are spaced 7 in. apart on these beams. Some of these ribs, however, are strips of aluminum reinforced in front by a strip of wood. The main rib on each side next the chassis is of wood, built up in channel section. From the front and rear edges, which are both sharp, the maximum thickness between the upper and lower surfaces is about 3½ ins. The covering, top and bottom, is Continental fabric. The planes are capable of being warped and the angle of attack is stated at 7 deg.

Frame.—The ash and poplar frame is square in cross section and measures about 23 ft. in length. It is braced with wood struts and piano wire ties. It weighs 45 lbs. and will bear 880 lbs. in the center without bending. The pilot sits inside the frame just at the rear edge of the main surface. He rests his back against a leather strap, while his feet are placed on a pivoted cross piece which operates the vertical rudder. Vertically in front of the aviator is the lever for warping the wings and controlling the wing tips at the rear end. This lever occupies the left hand, while the right is free to control the throttle and spark levers, or to increase the pressure in the oil tank by pressing a rubber bulb. A two-wheeled chassis supports the front part of the apparatus and the rear part rests on a single wheel of smaller diameter.

The two front wheels are mounted on castor brackets. The chassis to which these wheels are attached consists of two tubular steel columns braced together with two wooden beams, on one of which the front end of the whole frame rests. This beam is fastened to the heads of the columns by a steel strap so arranged that the frame rests in a kind of cradle. The upper beam is merely a strut between the two columns. A clever combination of springs and rubber bands take all the shock in landing.

Stability Device.—In the rear are the four horizontal stabilizing planes. The center ones, of about 17 sq. ft. surface, are fixed. At the outer edge of each of these is a movable tip operated in conjunction with the warping of the wings by means of the lever and gear especially invented by Bleriot. Thirteen feet from the rear edge of the main plane there is a vertical rudder, of about 4½ sq. ft. surface. These rear planes drive the aeroplane up or down in place of the usual front horizontal rudder.

Motor.—Anzani, 3 cyl., air cooled, 22-25 h. p., weight 132 lbs., controlled by Bowden wire. It has auxiliary exhaust ports. It drives a Chauviere "Integral" directly connected propeller at 1,350 r. p. m.

Propeller.—Two bladed, wood, 6.8 ft. diam., 2.79 ft. pitch, pull about 220 lbs. at full speed. Chauviere claims 90-97 per cent. efficiency for this propeller.

Totals.—Length 26.24 ft., weight with pilot and gas for 3 hrs., 660 lbs. The machine lifts 4.38 lbs. per sq. ft., and the weight carried per unit of power is 30 lbs. It flies at 34 m. p. h. One authority gives the weight with pilot and fuel as 715 lbs., 484 lbs. for the machine alone.

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MOONLIGHT AND SUMMER SKIES

(Continued from page 85)

us into beds—just about the time the first birds were beginning to sing.

After breakfast (later in the morning), Mr. Geller, about twenty of the young men students, some guests of Mr. Geller's, Miss Cantor, the Suttons and the "balloon people" went to the swamp to see about the health of the balloon.

Here we spent the day, and here Miss Cantor spread a delightful and delectable lunch. Imagine being seated on life preservers, in the middle of a swamp, feeding on fried chicken and ice cream.

It was lots of fun watching the men struggle round. "Follow me!" commanded Mr. Geller, and he straightway fell in up to his waist.

Toward evening many hands and willing hearts had the entire outfit off the swamp. We drove back to the school, where we were most excellently entertained during the evening and the next morning, and about 11:30 on July 5 we said our good-byes.

They tell me I am to have the Eldridge-Simmerman cup for long-distance ballooning by women out of Philadelphia. After such a delightful adventure, this seems like getting the penny and the cake.

F. J. Cornick, of Grand Haven, Mich., has about completed a glider.

FOR SALE.—14 h. p. 2 cyl. Peugeot motor at **$200**. Address: Peugeot, care of Aeronautics.

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Also
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remaining in the air 19⅛ hours, carrying 2 passengers, Dr. Goethe Link and Russe Irvin, regular equipment and 640 lbs. of sand.

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THE CURTISS AEROPLANE

(Continued from page 87)

operated from the cam shaft, the oil being fed through the hollow cam shaft to the main bearings thence to the crank, and connecting rod bearings, the overflow from the case returning to a separate reservoir underneath the engine, from where it is again pumped through the system. The crank case is of aluminum alloy, McAdamite, and the shafts are of vanadium steel. The pistons and connecting rods are of aluminum alloy. Valves both in head actuated by a single push rod and cam. Weight, including oil and water pumps, is 85 pounds. Ignition is by Bosch magneto, weighing 12½ pounds. Power developed, 25 h. p. at 1,300 r.p.m., with a maximum speed of 1,800 to 2,000. Weight of complete power plant, motor, radiator, magneto, oil and water pumps, about 192 pounds. The shaft of the motor coincides with a line drawn from the pivot of the front control to that of the rear; 2 ft. 3 in. above rear beam.

Propeller—Wood, 6 ft. diam., 7 in. wide at extremity, 4 in. at the center; pitch 17-18 deg. Direct connected on engine shaft.

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AERONAUTICS

THE AMERICAN MAGAZINE OF AERIAL LOCOMOTION

VOL. 5
NO. 4

OCTOBER '09

25
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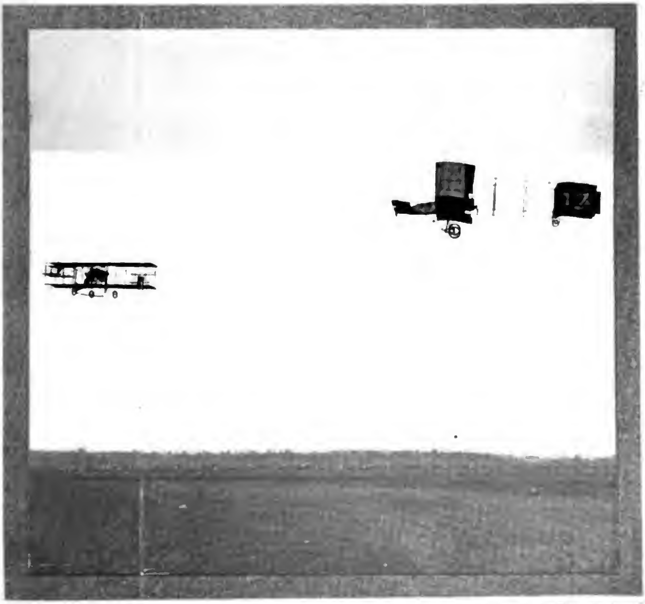

CURTISS AVOIDS COLLISION IN MID-AIR

Edwin Levick Photo

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AERO FORUM AND MARKET PLACE

With this issue is inaugurated a new department called "Exchange."

Progress in Aeronautics would be materially assisted if those interested could and would gather together, discuss their ideas, hold model contests, form clubs and bring organized endeavor and influence to bear on the popularization of this new sport and science and the encouragement of it through education and governmental co-operation. For one thing, strong pressure should be put upon Congress to appropriate ample sums for the carrying on of experiments, and the purchase and operation of airships and flying machines.

With the rapidly increasing realization of what aerial locomotion means, there must be few large cities in America where there are not 20 or 30 enthusiasts...These should get together, and those who are willing to meet others with a view to mutual profit and co-operation are asked to write a post card to "Aeronautics," 1777 Broadway, New York, and we will do our best to put them in touch with others. We would like to see a club in every large city.

We will print in this new department all such requests. If you know of anyone interested, won't you give us his name, and we will do our part.

If you have a suggestion which you think will aid a constructor of a machine, write it out for printing in this mutual aid forum.

If you have a new idea for a flyer, describe it briefly, and send it in. If you have invented a new device, part, attachment or complete machine give us a concise description of it. In this way you may interest capital in your plans.

If you have money to invest in aerial apparatus, let us know it and we will print a note with whatever conditions you may wish to impose. If you do not desire your name used, please so state in your communication.

If you have suggestions as to the part the government ought to take, if you want any information, or have it to give, let "Exchange" be the medium.

The idea in this department is to bring together every force which will make for advancement. We want to make "Exchange" an aeronautical forum and market place.

Let us have your help to keep this of ever-increasing benefit to all.

STATUS OF THE WRIGHTS' SUIT

By Thomas A. Hill

OF THE NEW YORK BAR

EDITOR'S NOTE.—All interested in the advancement of aviation have welcomed the suit brought by the Wright Brothers, and aviators all over the world should commend the Wrights for taking the initiative towards establishing "the limits to which other inventors may go" with respect to their particular patent. Of course, nothing the courts may say will establish any limits beyond those contemplated in the claims of the Wright patent, as the courts have no jurisdiction of anything not covered by said claims in the present suits.

We have asked Mr. Hill, who has made a special study of aero patents, to give his unbiased views of the legal aspect of the case. This article should not be considered as forecasting the action of the courts, but only as the expression of professional opinion. .Of course, exception will undoubtedly be taken to Mr. Hill's statements, as mind is never infallible, but we wish it understood that the position of AERONAUTICS, in this instance as in all others, is one of strict impartiality.

The only papers in the suit to which access was possible were those in the action brought against The Aeronautic Society, but it is improbable that the other papers in the other suits differ materially.

I HAVE carefully inspected the file wrapper at Washington in the Wright Brothers' case, and also their bill filed in the United States Court for the Southern District of New York in action brought against The Aeronautic Society, and am at a loss to find the motive for such a suit at this time.

It may be laid down as a general principle that it is always advisable for a patentee holding a valid patent to prosecute infringements without undue delay. On the other hand, assuming that his claims may fall down in whole or in part, it would hardly seem good policy to prosecute a suit at an early stage in view of the fact that weaknesses in the patent would thereby become so generally well known as to bring about competition which might otherwise be intimidated under the supposition that the claims are perfectly valid.

The procedure in a suit of this kind usually begins with the filing of a bill by the Plaintiff, an answer by the Defendant, and so on until issue is joined. These pleadings usually contain the opinions of experts in an art and reference to exhibits in further illustration of the contentions set up. Following this, the usual testimony is taken on both sides. The patent itself is only prima facie evidence and its invalidity may be established by the Defendant upon many grounds. In the case in question, many issues of fact remain to be determined from the evidence and the adjudication is subject to appeal to the United States Circuit Court of Appeals.

In the event of a successful issue in this suit for the Wrights, its effect upon the industry is uncertain. In the first place success by the Wrights is somewhat doubtful, as will more fully appear hereinafter; and in the second place, should they be successful, it may be upon grounds which will not insure success to them in a similar subsequent suit.

The Wrights Brothers' claims, as read and interpreted from the content of their file wrapper, do not cover supplementary surfaces, and it is difficult to understand how supplementary surfaces can be brought within what was intended to be covered by the patent granted to them.

More particularly with regard to the issues involved in the present suit, the claim has been based upon United States Letters Patent numbered 821,393, dated May 22, 1906. It appears that the application upon which this patent was granted was filed March 23, 1903, by Orville and Wilbur Wright as individuals, having retained no attorney at that time. The application does not seem to have been received very kindly by the examiner in charge of the case, who rejected all the numerous claims upon the following patents:

220,473, Greenough, Oct. 14, 1879.

397,647, Holmes, Feb. 12, 1889.

542,100, De Los Olivos, July 2, 1895.

606,187, Butusov, June 28, 1898.

133,046, McDermott, Nov. 12, 1872, and German patent 84,949, to Rentzsch.

A quotation from the examiner's action reads as follows:

"The claims are furthermore all rejected as based upon a device that is inoperative or incapable of performing its intended function. The examiner is unable to understand how the machine is supposed to operate."

In a letter from the Wright Bros. dated May 4, 1903, in response to the above action, on page 2 thereof, the following statement (which is quoted therefrom) seems indicative of the scope and limit of the invention as understood by the Wright Bros. more than six years ago.

"The twist is in the surface itself, and has no reference to a variation in the angular inclination of a plane to a car or body suspended beneath it."

In the second action by the Government Examiner, dated July 14, 1903, the case was again rejected as inoperative and on the grounds previously stated, and the Wright Bros. were advised to get an attorney.

On February 16, 1904, counsel appeared on behalf of the Wright Bros. by filing a Power of Attorney, and on July 14, 1904, filed an amendment on behalf of the Wright Bros. in which it was particularly set forth that the structure had been successfully used as a soaring and as a flying machine for several months. The argument of counsel in this amendment is particularly interesting at this time. It is as follows:

"In other words, the lateral balance of the machine is controlled by this twisting of the ends thereof as contradistinguished from the method usually employed of shifting a weight for this purpose. The Greenough patent, and others of that type cited, employ a rigid plane which tilts as a whole, none of them being provided with means for controlling the angular position of the lateral margins so as to present them to the wind at different angles. This is the main feature of applicants' invention, and as a means for attaining this end, the further feature of connecting the planes by uprights, of which the end ones at least are connected to both planes by flexible joints, is employed."

In the next action of the government, dated Nov. 8, 1904, the following additional patents were cited against the Wright Bros.' application.

338,173, Jongewaard, March 16, 1896.
728,844, Boswell, May 26, 1903.
And British patent to Moy, 15,221, dated June 25, 1897.

This action contains suggestions from the examiner as to phrasing for claims in the Wright Bros.' patent.

On January 13, 1905, an entire new set of claims, following the suggestions of the examiner, were incorporated in the case, and the claims were generally restricted to the bending or warping of the plane.

The next government action bearing date May 9, 1905, does not show much progress. The examiner said:

"On reconsideration of this case with the substitute claims in view, it is found that the ambiguities, inaccuracies and imperfections of the specification, drawing and claims (some of which have already been noted) are such as to preclude intelligent action upon the merits of the claims until the defects in question have been remedied."

The next amendment was entered on behalf of the Wright Bros. as of August 17, 1905, and contained entire new drawings, substituting three sheets for the original one sheet of drawings and substituting new specification and claims. In the meantime counsel for the Wright Bros. had had a personal interview with the examiner upon the case.

In the next action of the government dated Dec. 2, 1905, objections as to new matter and wrong description in the new specification were alleged and further suggestions by the examiner were offered. The case was then further amended on December 6, 1905, with explanation, and on January 26, 1906, the examiner further objected to the condition of the application. Finally, on April 13, a final amendment complying fully with the examiner's requirements was filed, and the case was formally allowed on April 21, 1906.

The above data is limited to the first patent obtained by the Wrights in the United States, the only other patent in this country obtained by them is numbered 908,929, dated January 5, 1909, and has no reference whatever to the present suit.

In the patent of the Wrights upon which suit has been entered against The Aeronautic Society, the claims are based upon the movement of the marginal portions of a normally flat aeroplane about an axis transverse to the line of flight or upon an axis perpendicular to said lateral margins, or to different angular relations to the normal plane of the body of the aeroplane. These different forms of expressing the flexing movement substantially establish the limitations of the eighteen claims in the Wright Bros.' patent referred to, except claims 12, 13 and 16, the claims 12 and 13 having reference to a flexible rudder as an element independent of the main planes of the aeroplane, and claim 16 having special reference to the rearwardly extending arms free to swing upward at their rear ends.

There is nothing in the Wright patent contained to warrant the inference that they at any time intended to use supplemental surfaces for accomplishing substantially what they accomplish by warping, flexing, bending, twisting or otherwise distorting the lateral margins of their main planes. From an inspection of the Curtiss machine, it will be seen that it is quite impossible to flex, warp or otherwise bend or move the main planes and that a similar effect to that produced thereby is obtained in the Curtiss machine by supplemental or auxiliary surfaces, planes or rudders, which are pivotally mounted and at all times under the control of the operator. It must be clear from the arguments of the Wrights and their counsel in prosecuting their claim for the patent, that it was clearly not their intention to *"employ a rigid plane which tilts as a whole."* This is precisely what Curtiss has done. Indeed, the Wrights could not have claimed such construction, as it is well known in the art, and if Curtiss has at any time attempted to obtain a patent on such construction, this fact has long since been well known to him. It must be clear that what the Wrights did apply for and were granted were claims limited to the distortion of the lateral margins of the main

(Continued on page 164)

IMPORTANT CONTESTS PROMISED IN ST. LOUIS EVENTS, OCT. 7, 8 & 9

Although the money prizes offered to winners in the aerial contests to be held by the Aero Club of St. Louis, October 4, 8 and 9, on the occasion of the celebration of the Centennial of the founding of St. Louis, do not compare with the large amounts offered abroad for similar events, a large number of aeronauts and aviators will take part. The Contest Committee has supplemented the prizes by offering cash for the appearance the day of the aeroplane contests, of Curtiss, Bleriot's machine, Delagrange and other successful aviators.

The success of the balloon races is assured by eleven aerostats, nearly all of which have been definitely entered; three of these are small balloons to compete in the event for 40,000 cubic footers, the same afternoon as the race for full-sized balloons.

EIGHT PROBABLE STARTERS.

The tentative list for the big race, to which others may be added, follows:

Aero Club of America—"New York," entered by Clifford B. Harmon; pilot not named.

Aero Club of Indiana—"Indiana," entered by Carl Fisher; G. L. Bumbaugh, pilot; "Hoosier," entered by Aero Club of Indiana; pilot not named.

Aero Club of St. Louis—"St. Louis No. 3," Albert Bond Lambert, pilot; "Centennial," H. Eugene Honeywell, pilot; balloon not named, John Henry, pilot.

Aero Club of Ohio—"Ohio," Charles Walsh, pilot.

Aero Club of Milwaukee—"Milwaukee," pilot not named.

SIX DIRIGIBLES ENTERED.

Six dirigibles have been entered in the contest to be held October 8, and of these three are positively expected to appear: namely, Thomas Scott Baldwin in his new airship; Roy Knabenshue in his new airship, now nearly completed at Toledo; Lincoln Beachey in his Californian machine. The others who may not be definitely counted on as yet are the 110,000 cu. ft. airship being built by G. L. Bumbaugh at Indianapolis for Carl G. Fisher; the W. J. Smith airship, "East St. Louis," of 25,000 cu. ft. capacity; the "American Eagle," of John Riggs, Hot Springs, Ark., the envelope for which has been delivered to the inventor by Leo Stevens.

Two St. Louisians are expecting to get their aeroplanes in the contest, although neither of the machines had been in the air as late as September 10. One is H. A. Robinson, with the Bleriot-type monoplane; the other Frederick Kuhno, with a Farman style biplane. It is probable that a few others now unknown, will come forward at the last minute.

There will be at least one, though probably more, well-known successful aviators in the events, October 9. If Curtiss cannot appear, Willard probably will; besides, Delagrange is expected by some members of the committee.

ST. LOUIS HAS SIX PILOTS.

The Aero Club of St. Louis has leased a large tract of land adjoining its permanent ascensions grounds, and the fence has been extended to embrace the new tract. It doubles the former size of the grounds and gives ample room for sphericals and dirigibles. A small grand stand of 3,100 people capacity has been built for the use of club members and invited guests. There will be no admission fees. Store rooms and temporary hangers are to be arranged for contestants' use. Thomas Scott Baldwin will make the hydrogen gas for dirigibles at the expense of the club.

In the race for small balloons the new Air Craft Club of Peoria has entered the 38,000 cu. ft. "Peoria," and the Aero Club of St. Louis, the "Dauntless" and the "Missouri." Other entries are expected to bring the total number up to five or six starters. These with eight balloons in the big race would make a total of 14 balloons inflated on the ground at the same time. There is ample provision for this. A 16-in. gas main is now on the club grounds, and it requires only about 40 minutes to inflate a 78,000 cu. ft. aerostat. At present there are only three connections from the main, but as many as needed will be provided in time for the race.

Because a number of the clubs which wish to enter balloons have no available pilots, the Aero Club of St. Louis will furnish the men as far as possible. The club will, by the time this issue of AERONAUTICS is published, have six licensed pilots, as follows: Albert Bond Lambert, H. Eugene Honeywell, John Berry, S. Louis Von Phul, James W. Bemis, Harlow B. Spencer.

TO REACH GROUNDS.

The ascension grounds of the Aero Club of St. Louis, where the balloon and dirigible events will be held, is between Taylor and Newstead avenues, with frontage on Chouteau avenue and Papin street. Cars, known as the Taylor line, run north and south on Euclid avenue, which is one block north of Taylor. Other surface cars run east and west on Chouteau avenue, past the grounds. These cars, marked "Chouteau" and "Market," can be boarded as far downtown as Fourth street. All other lines, north of the railroad tracks which divide the city, connect by transfer with the Taylor line.

It is planned to start the aeroplane contests from what is known as Art Hill, in that part of Forest Park which was used for the World's Fair grounds, but has since been reparked.

BALLOON RACE THAT WOKE A CITY

By E. Percy Noel.

ON the evening of August 18 the citizens of Peoria, Ill., who passed by a small open tract of land on the water front, saw three white cloths laid out close together and along the edge of each, rows of white canvas bags filled with sand. As dusk came on something round with a netting spread over it was seen. Somebody said "Those are the balloons." "Huh," returned another; "think they'll go up?" "Big fake!" was the rejoinder, with a laugh.

The next afternoon these deflated envelopes of the night before stood plump and taut, snugly held close to earth by encircling ballast bags from the lowest loops of the nettings. The levee was lined with 50,000 persons, who had earlier in the day been watching fast motor boats on the river. They looked at the balloons in much the same way that a casual spectator might have looked at a "flying machine" twenty years ago. The majority of the people expected to see "professors" in tights appear on the scene to ride the balloons skyward. The others had an idea that these balloons before them were some new kind of "airship" and had their very frank doubts about their being able to ascend from the ground.

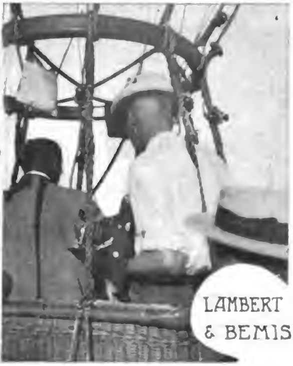
EUGENE BROWN AND A.B. LAMBERT

Photos by E P Noel

I know, because I walked through the crowd and I caught such snatches of conversation as, "They can't get 'em off the ground." Mothers made their children behave with a new bugaboo—"I'll put you in the balloon and they'll take you up," but they themselves did not believe the balloon was reasonably sure of getting off the ground. You might understand such an attitude the night before the balloons had been systematically inflated and made ready, but up to the very moment of the first start it seemed incredible.

Afterwards I tried to get their point of view. To do so I had to imagine that I had never seen a gas balloon, and I couldn't quite manage it. The trouble with that great crowd which could not believe in balloons as easily as they might in fairies was, not one out of 1,000 had ever seen a gas balloon before.

The Aero Club of St. Louis united with the Air Craft Club of Peoria, which at that time consisted chiefly of Eugene Brown, and showed them. Now Peoria is glad, and, I am told, wants more ballooning. All of three of the balloons came from St. Louis, and H. Honeywell, the builder to whom credit is due, inflated them and got them away without a hitch of any kind. "Beautifully done," was the opinion of all present who knew anything about ballooning.



LAMBERT & BEMIS

The starters were the "Peoria," of 35,000 ft., which proved the winner—a new balloon bought by the Air Craft Club of Peoria and piloted by H. Eugene Honeywell with George E. Smith, the first Peorian to make an ascension, as aid. The "Missouri," of 40,000 ft., was piloted by Albert Bond Lambert of the Aero Club of St. Louis, with James W. Bemis, also of the St. Louis Club, as aid. In the "Illinois"—the "Dauntless," renamed—35,000 ft., were S. Louis Von Phul, who had just been granted his license by the Aero Club of St. Louis, and Harlow B. Spencer, another St. Louis club member.

The "Illinois" is a heavy balloon and the occupants of the basket were heavy. The result was that the mixed gas provided would not lift more than one and one-half sacks of ballast besides the complete craft and aeronauts. Of course, the balloon was out of the race from the start. It landed nine miles from the starting point after 35 minutes in the air.

But "Peoria" and "Missouri" gave a good race. Of only 35,000 ft. capacity respectively, these aerostats carried their teams through the night and into the next day, making runs that set new official records for balloons of less than 40,000 ft. The winning "Peoria" travelled 230 miles, landing seven miles south of Dixon, Mo., at 11.15 a. m. on the second day, after 17 hours 5 minutes aloft. The "Missouri" accomplished 165 miles, landing near Marissa, Ill., at 10.15, after 16 hours 50 minutes in the air; and the "Illinois" at Groveland, Ill.

But to return to the incredulous fifty thousand massed on the Peoria levee, within a few blocks of the center of the principal business district. They saw the basket hooked on to the deep yellow colored envelope of the "Missouri"; saw Albert Bond Lambert and James W. Bemis, with the expensive Richard instruments hanging from the ring and rigging, ready in the basket. But did many of the fifty thousand believe then that for these men it was a simple matter, that there was really not the shadow of a doubt about their aerostat being a safe and stable craft? I think not.

When Mr. Lambert, who had calculated his ballast to a nicety, weighed in very quick time, he sailed away heavy, as is his practice, and headed southeast to cross the Illinois River. The crowd was deadly still. There was not even an "Ah" to relieve the quiet. Suddenly Mr. Bemis, who had been very busy with a hand camera, flung out his arm and gave a good American yell that sent an echo of triumph along the valley. For the echo was the answering roar of the multitude.

When over the Illinois River Lambert threw over his 300-ft. drag rope. The crowd cheered again as the big ball unwound and let the rope out to its full length. The wind was blowing at about six miles an hour on the ground, and for a time the "Missouri" appeared almost motionless. Then ballast could be seen going overboard, and soon the aerostat rose to an altitude of perhaps 2,000 ft., where a better air current was caught that took the envelope out of sight in a little more than half an hour.

CROWD SPOILS VON PHUL'S START.

Von Phul experienced difficulty in getting away because the crowd, unkept by the police, massed about the basket, rendering weighing a difficult process. He tried several times to get away with more than four sacks of ballast, but was finally unsuccessful—it was all he could carry. This was because the balloon he used was the old Dauntless, several times varnished and originally a heavy-fabric balloon. Besides, he and his aid, Spencer, were the heaviest pair in the race. He started several hundred feet from the ground cloth, the open space on the levee, one solid mass of struggling people. The balloon was carried by the wind close to the ground for several hundred feet, Von Phul discarding ballast. Finally she lifted and sailed free, following course a few points nearer due south than the "Missouri." When beyond the river Von Phul let out his drag rope, and when it had unrolled it appeared to be not more than a hundred feet from the ground.

Before Honeywell got the "Peoria" ready to start, the "Illinois" dipped out of sight beyond a clump of tree in the distance. The "Missouri" could then be fairly seen, a dim speck in the distance. Honeywell had superintended the hooking up of the balloon of his two competitors, while the "Peoria," which he was to pilot, was still close to the ground, with the ballast bags on the end of the netting.

VON PHUL LANDS AT GROVELAND.

In half an hour after the Illinois started he slid the ballast bags down to the foot ropes, hooked up and got away in spite of the fact that at the last moment it was discovered that his valve cord was fouled. This made it necessary to pull the envelope down by the foot ropes so that Honeywell could reach into the appendix and straighten the cord. Honeywell weighed promptly by putting on, instead of taking off, the ballast, and seemed surprised at the lifting power of the gas. To avoid the crowd, he allowed the balloon to get away "light," so that it rose straight into the air and did not attain equilibrium before it had reached an altitude of some 1,800 ft. It followed the course of the two that started first, with fourteen sacks of ballast aboard.

CROSSED OZARK CREST.

The Peoria crossed a crest of the Ozark range at an altitude of 6,000 ft. and landed five miles beyond, in a field on the farm of John Riddle. The balloon was deflated near the banks of the Gasconade River. So sequestered was the spot that it was twenty minutes before the farmers, who had been following the balloon as best they could, through the hills, reached it. After much delay a farm wagon was procured and the deflated envelope, basket and aeronauts went up to the hill to Dixon. They did not arrive there until 6 o'clock last night.

The voyage of the Peoria establishes a new record for the West, and probably for America. Never before has a balloon of 35,000 or 40,000 cu. ft. capacity traveled so far. The record is only forty-seven miles behind the distance made by John Berry and Paul McCullough, when they won the national balloon race from Indianapolis last June in the University City. The Peoria is 8,000 ft. less than half the capacity of the victorious balloon in the national race.

After landing Honeywell stated that he could have kept the balloon up longer, but the appearance of the rugged country ahead made him seek the first landing place. Whether or not he believed that he had won the race before he landed he did not say, but was content to take what distance he and his aid had been able to make rather than to get farther from the railroad in the rough Ozark country. No map was carried in the balloon, and the aeronauts did not know where they had landed, or what the prospects were farther along than they could see at their high altitude. Each aeronaut slept an hour on the voyage. Smith had never been in a balloon before, but he kept watch successfully while Honeywell got his rest.

Both Honeywell and Lambert traveled a fairly straight course, somewhat southwest at an average speed of about 15 miles an hour. The Peoria crossed the Mississippi River at Louisiana, Mo. At 4.30 a. m. it went over the Missouri River at Morrison.

The Missouri was reported at about 9 a. m. at Coulterville, Ill., and at 9.20 a. m. at Tilden, Ill., through a message dropped by Lambert and Bemis. This indicates that the balloon had begun to travel north when Lambert landed at Marissa. Lambert said that he had only one sack of ballast left before he came down.

PEORIA CLUB NOT LONG FORMED.

The Aircraft Club of Peoria, under whose auspices the race was held, is a new organization with a small membership. The active head of it is Eugene Brown, who made arrangements with Honeywell to get together three balloons for a race from Peoria. Brown also sought the assistance of the Aero Club of St. Louis, through its honorary member, Lambert. Brown agreed to purchase, on his responsibility, a new 35,000 cu. ft. balloon from Honeywell, to be named the Peoria, though confident the Aircraft Club would afterward purchase it. The Peoria Club supplied the gas and facilities for inflation, and Honeywell and the Aero Club of St. Louis provided two other balloons and three licensed pilots, and obtained the sanction of the Aero Club of America. The Peoria Club offered a trophy to the pilot making the greatest distance.

Honeywell did not receive the definite order for the balloon "Peoria" until scarcely two weeks. He carries balloon cloth in stock, ready for hurry orders, and so was able to build the balloon and deliver it at Peoria in time for the race. But to do so he found it necessary to work day and night at his Cottage Avenue workshop. The basket was ready first and arrived at Peoria Monday. The envelope and netting, with the valve and appendix holder, was not finished until Tuesday, when it was promptly shipped to the Peoria Club. To hurry the work the fabric was dried in the sun after being varnished, which made it a slightly darker color than the "Missouri," which was dried in a cool, dry cellar, but equally efficient. All three balloons in the race were made by Honeywell in his own shop. Honeywell superintended the inflation of each at Peoria, beginning the night before the race, and it was accomplished without incident.

Honeywell got the cup offered by the Brown, Page and Hillman Co. It measured 33 in. in height, decorated with the wings and wheels indicative of the new mode of flight, the aeroplane, valued at $250. Peoria is very enthusiastic on the subject of aeronautics.

AERO SHOW DURING HUDSON-FULTON

An aeronautic exposition will be held in Madison Square Garden, New York, from September 25 to October 2, during the period of the Hudson-Fulton celebration, when thousands of tourists and visitors will be in the city.

During the Hudson-Fulton celebration there will be held in and about this city flying-machine demonstrations, balloon and airship ascensions and world-famed men like Wright and Curtiss will give public exhibitions.

The show is expected to be a rendezvous of the student and lover of aeronautics, to stimulate the interest therein, encourage inventors and experimenters, bring together those working in the various fields of aeronautic endeavor, interest capital in construction work and enable those who have perfected machines and appliances to market their product.

There are promised exhibits of full-sized and famous machines, airships, flying machines, balloons, kites, gliders, windwagons, engines, models, plans, etc. This will unquestionably be a splendid opportunity for inventors to show what they possess and to see what others are doing. Ample space is allotted and there will be no charge for space in this show. Exhibitors will also be furnished with season tickets without charge. Trade exhibitors, approved of by the directors, can have space for demonstration and sale of goods without restriction.

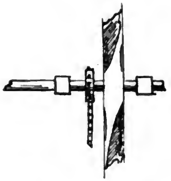
The Gordon Bennett cup, just won by Curtiss, has been promised by the Aero Club of America, and a Curtiss biplane will be the star attraction.

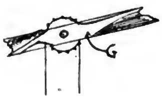
For information, address Alfred Chasseaud, 1 Madison Ave., New York.

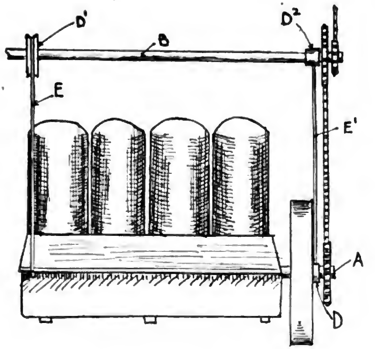
LATERAL AUTOMATIC STABILITY DEVICE

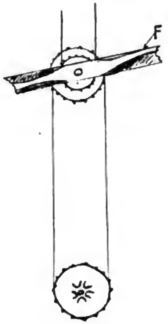
By Dr. H. W. Walden

LONG has the pendulum principle been considered as the possible, most probable and simplest agent for the solution of a lateral balance device for aeroplanes. Many ingenious designs have been patented by inventors who proposed the use of an extra weight in addition to the weight of the machine; while others employed the operator's seat, or the radiator, the wheels, the chassis or a gyroscope to act as the suspended body of a pendulum.









In trying to solve the balancing problem, I concluded that the pendulum stabilizing idea should be right were it not to add an objectionable extra weight or complicate the structure to the impractical. Therefore, I resolved to use the motor itself as a pendulum, and have reached surprisingly splendid results.

The motor (M) is suspended from its own shaft (A), with ball bearings, D, D^1 and D^2 separating rods E and E^1 on the second shaft B. Shafts A and B are parallel. On shaft B the propeller may be directly attached (F) or suitable transmissions may be used to a single propeller for a single propeller machine (G) as well as to the two propellers for a double propeller machine.

The motor will hang in a vertical line with or without a load, or overload, on the propeller, as has been proven by my experiments at Morris Park. Any diversity from the horizontal of the machine will cause the weight of the motor to bring in action suitable stabilizing surfaces which will immediately bring the aeroplane to the horizontal position. The gyroscopic action of the flywheel and the heavy weight of the motor may allow us to consider this thus obtained pendulum as a fixed point around which the planes are swung; *not* as a pendulum suspended from fixed planes with undesirable oscillating movements that would tend to unstabilize rather than stabilize the machine laterally. Remarkable also is the total absence of vibrations on the machine itself due to this mechanical balancing arrangement.

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*Patents applied for.

CONSTRUCTIONAL AIDS—V.

CONTINUING this series of helpful notes, contained in the April, June, August and September numbers, there will be found on this page some valuable points in the building of the aeroplane.

Fig. 1 shows two cross-section views of the method of laying out a propeller. Layers of white pine or spruce may be used, or spruce and ash can be alternated.

Fig. 1

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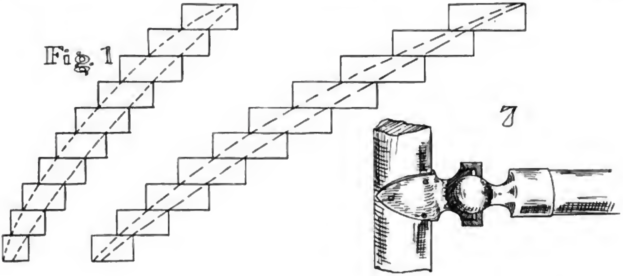

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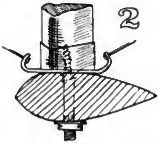

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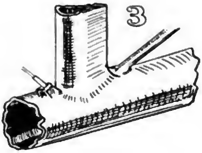

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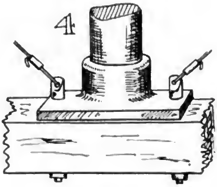

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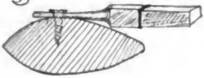

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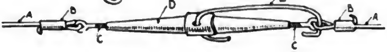


After having figured out the desired pitch and the angles at various points along the blade, with these records, a drawing and gauges at hand, the strips are coated with hot glue, placed in position and held by clamps till dry. Then the draw-knife comes into play to shape the blades, closely following the pattern and incessantly gauging.

When shaped, cover with a solution of hot glue, rubbing it well into the grain. When thoroughly dry, sandpaper to glass-like smoothness, then varnish with shellac, rub down again and reshellac with a very thin coat. Some have covered the blades with strong linen after the first glue coat, with then a second coat of glue, after which the propeller was rubbed down and painted with zinc white. The cloth will aid in retaining original shape.

In Fig. 2 a method of attaching horizontal beams and vertical struts is shown, with guy wire plate. The latter is of steel, inserted as shown. Holes are drilled to take the bicycle spoke nipples which fasten in turn to the guy wires themselves. An ordinary wood screw is beheaded and a thread cut to take a nut.

In our British contemporary, *Flight*, are given some schemes for fastenings, as shown in Figs. 3 and 4. The Howard-Wright biplane, in which tubes are employed throughout, has

(Continued on page 165)

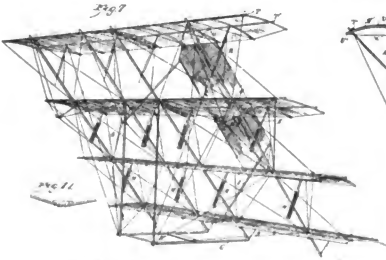
THE SELLERS STEP AEROPLANE

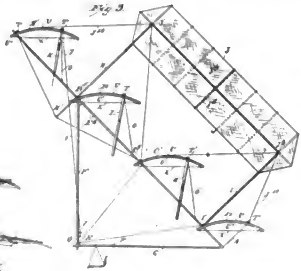
M. B. SELLERS, whose article on his step glider appeared in the June number of AERONAUTICS, has been making some power flights.

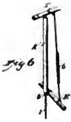
Following is a detailed description of the apparatus used as a glider:

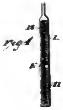
DESCRIPTION OF MACHINE.

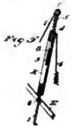
Fig. 3 is a sectional side elevation of the apparatus used as a glider. Figs. 4, 5 and 6 show the devices by which one secures a regulation or control of the machine. Fig. 7 is a perspective view. Fig. 8 is a detail view illustrating the means connecting the spars and for securing the cover of the wing. Fig. 9 shows the coupling bar used to connect the wires. Fig. 10 is a detail sectional view of the casing. Fig. 11 is a detail view of the knee block used to connect the spars when the wings are placed at a dihedral angle.

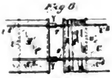












The object of the invention is to produce a better arrangement of surfaces and framing; better stability, and control. In this invention the surfaces are arranged in steps, the highest surface being in front. This arrangement of the surfaces, it is claimed, gives greater efficiency than any other, but it is difficult to devise a frame for this particular grouping of surfaces, which shall be light, sufficiently strong and rigid; and have small wind resistance. This invention accomplishes this; and also offers facility for the application of the regulating device to be described.

When a sudden gust strikes a compound aeroplane or when its speed is accelerated, it tends to tip up in front; and this tendency can be overcome by moving the center of gravity forward; or by diminishing the angle of incident of the planes, and especially the forward plane or planes. Mr. Sellers' method of increasing stability is to construct the planes or wings so they are held in their normal position till the pressure on them exceeds a predetermined amount, when they tip up. Their action being independent, any one wing which receives an excess of pressure will tip up; and where there is no excess of pressure there will be no change. Furthermore, when desired, the operator may depress the rear of a wing by pulling on a cord or by some other well known device.

In the form of the device here shown are four aeroplanes, each consisting of two so-called wings, joined at the center by suitable couplings. Each wing, Fig. 8, is arched from front to rear and comprises two spars T and T', and a covering U having transverse ribs U' fastened thereto, the covering having pockets U^2 into which the spars are slid in erecting the wing as here shown. The ribs are held in a bowed form by span wires.

These four wings are supported by four transverse inclined struts which are suitably fastened to the front ribs of the respective wings where they cross said ribs. The rear spars T′, form no part of the framework but are free except as supported by the devices K, L, M, N. The frame formed by the spars T and struts E, etc., is braced by the diagonal tie wires, and is supported in an inclined position by the posts F, F, and the base rails G, G. Stay wires R, R, connect the juncture of parts Q and G with the six lower spars T at points near the crossing of the struts E, E′, etc. The fin in the rear is not absolutely necessary for all operations of the machine, but it is very convenient with a gliding machine, prevents sheering, and makes the machine face the relative wind. Of course it is stayed by wires. In fastening the various wires to their staples the hooked coupling rod, shown in Fig. 9, is used. In this construction of coupling rod, it will be noticed the coupling rod is bent between its ends forming an eye and having a shank beyond on the said eye, and a line wire is extended around the shank and through the eye and around the same and then wound around the shank toward the extremity thereof and twisted at the said extremity of the shank around the line wire and thence twisted back around the shank and wire and passed through the loop or eye and around the same.

A greater or less number of surfaces can be used. In the power driven machine a movable rudder of any suitable well known design may be added. Figs. 4, 5 and 6 show different forms of the regulating device. That shown in Fig. 5 is preferably used on the upper wings. A guide bar 1 projecting down from the lower end of the rod K slides freely in the loops 2 on the strut E. The upper end of the rod K has a concentric bore, and a slot at 3 intersecting said bore, and the rod 4 slides at the lower end freely in the bore; but its motion is limited by the lateral bend 8 at its lower end. The upper end of rod 4 is suitably fastened to the spar T′ and it is forced out to its limit and held there by the spring 5. The spring 6 extending from the upper end of the rod K, to the strut E resists the lift of the wing and holds the rod K down against the loop 2. When, however, the pressure on the wing exceeds the tension at which the spring is adjusted, the spring yields and the wing is allowed to tip up thus diminishing the angle of incident automatically. Furthermore, a cord 7 (see Fig. 3) is attached to the spar T, and is led in any suitable manner to a point convenient to the operator and attached to any suitable lever or handle; in the drawing it is shown attached to a ring; it must however, be slack. When the operator desires he may depress the wing or portion thereof by pulling on this cord. It will be seen that here the automatic and the voluntary regulation are independent, or rather do not interfere with each other. Fig. 6 shows the same device as Fig. 5 except that the "voluntary regulation" is omitted and the spring 6 is attached directly to the spar T′.

Fig. 4 shows another form of the regulating device used on this machine. The fork L straddles the strut E and is fastened at its upper end to the spar T′. The springs 11 and 12 hold the fork and the wing in the desired position and the auxiliary spring 6, Fig. 3, together with the spring 12 resists the lift of the wing. This device, while accomplishing the same result as the one before described, does it in a different manner; and it is used on this machine, and is here described, because it has been found peculiarly applicable to the lower wings; while the other device was found more suitable for the upper wings.

It will be seen that as the curvature of the wing is maintained by the span wires X, this yielding or tipping does not change the curvature but only the angle at which the wind strikes the wing, and in this sense the wing may be said to be practically rigid. The automatic regulation may be applied to any, or all of the wings as desired; also the voluntary regulation; and where the regulating device is not used, the wing is supported by a post or stay.

THE WRIGHT BROTHERS

Little caring for the mad world's cry and hue,
They toiled in quiet, patiently and sure they wrought,
As building cautious on each lesson taught
By failure, or by what their plans proved true;
Little heeding that which others thought they knew,
Step by step they proved what step by step they thought,
With each success one nearer what they sought,
Until at length their triumph came—they flew.

Ah! master men are they who quiet dare
The task which by the world is marked with scorn,
Who reap at first but wormwood and the thorn,
Yet patient, self-possessed, they toil with care,
Their eyes fixed on success's glorious morn.
"God grant us more such men!" should be our prayer. MERYL DUNKLE.

WASHINGTON FOR BENNETT MEET

By Our Washington Correspondent

WASHINGTON wants the next International aviation meet and the members of the Washington Aero Club are sparing no efforts to that end. The business men have given assurances that the money required to obtain the meet will be forthcoming and the question of a suitable aerodrome where a 10 kilometer course could be laid out has been carefully gone into. The result is that it has been found that Washington's surrounding country offers several excellent flying grounds.

The principal argument advanced by the Washington enthusiasts in favor of Washington for the next contest, is that the government is most interested in the present status of aviation and that by selecting the national capital, the Aero Club of America could not be accused of showing any discrimination. Certain members of the Washington club, who hold membership in the Aero Club of America, strongly oppose the holding of the international meet in New York, contending the parent organization would show very bad taste in appropriating to itself the first opportunity that has come to this country to have the international aviation contests.

The success of the contests at Rheims have had a decided effect upon the military experts who have made a study of the application of aeronautics and aviation to military uses. A year ago it was held that the dirigible balloon would prove of greater value in time of war than an aeroplane, but with the stability of the aeroplane demonstrated as it has been, this view has been changed so that the aeroplane is looked upon with greater favor than the lighter-than-air type.

The work of the motor-balloons here and abroad during the past summer have shown that this class cannot be depended upon except under the most favorable conditions. There have been a number of accidents, even to some of the large foreign air-ships, and these experiences, when compared with the splendid record which marks the more general use of the aeroplane, have mitigated against the lighter-than-air craft.

The principal advantages of the aeroplane, according to the Signal Corps officers who have devoted themselves to the study of the question, are that the heavier-than-air machine can fly closer to the ground and therefore distinguish objects better, and that the aeroplane is less vulnerable as a target than a dirigible, being capable of greater speed and having less exposed surface.

Emile Berliner, who is having a powerful rotary motor along the lines of the Adams-Farwell engine built at his laboratory here for use on the Williams-Berliner helicopter, is also working on an aerial torpedo. This new engine of destruction is built along the lines of an aeroplane, and is to have a gyroscopic attachment that will aid in giving it direction.

The use of the College Park field is to be extended to private experimenters, according to Gen. Allen's plans. There are a number of local inventors who intend availing themselves of this facility. Sheds will have to be erected by those who intend to use the field for their private experiments.

J. H. Smidley, who has an ingenious monoplane, is ready to give his machine a trial almost any day. He has it at the Bennings race track. It weighs 225 pounds, and is equipped with an eighteen horse-power motor. The appearance of the machine is very promising, the method of control having many features to commend it.

Harry A. Orme, another local inventor, has a bi-plane which he hopes to try out in a short time. It is equipped with a Belgian motor and has a number of original features.

Samuel Luttrell, a local automobile enthusiast, has built a biplane which he is said to have tried out at Rockville, Md. So far he has given no public demonstration of his machine, and it is inferred that his tests developed the necessity for making a number of changes in its construction.

Lieut. Commander Geo. O. Sweet, of the Navy, who is in charge of the Bureau of Equipment, is looking after the interests of that branch of the service in aeronautics. Last year Lieut. Sweet drew up specifications for a machine to be used by the Navy. He conferred with Orville Wright before drawing up the plans. Victor Metcalf, who was then Secretary of the Navy, refused to approve Sweet's plan to purchase an aeroplane, although it is understood that the appropriation made for experimental equipment, and which is disbursed by the Bureau of Equipment, would have provided the funds necessary for the purchase of the aeroplane.

There is still a possibility of the Navy taking up aviation, but no action will be taken until the return of Secretary Meyer. He is understood to be in favor of action in the new field being taken by the Navy. It is probable that Lieut. Sweet will go to Hammondsport when Glenn Curtiss returns from abroad, and that he will witness further experiments with the "June Bug," with which Curtiss made a number of experiments in rising from the surface of the water. It is said that an aeroplane can easily be launched from the deck of a moving vessel without any other initial momentum.

Army News

WHILE the estimates which the War Department has submitted to the Secretary of the Treasury for the appropriation needed for the next fiscal year do not include any provision for additional airships for the army, there is little doubt that a small sum will be included before the estimates are sent to Congress in December.

The Signal Corps still has about $25,000 available for aeronautical work, but with the rapid strides being made abroad, there is a feeling in army circles that something must be done by the Signal Corps which will insure for the army a greater aerial navy. It is possible that one of the first steps in this direction will be the equipment of the new aviation grounds at College Park, Md., with a complete experimental laboratory and testing apparati for the use of the aeronautical division.

A comprehensive plan for an aerodrome and a complete experimental plant was proposed by Lieut. Selfridge just prior to the unfortunate accident at Fort Myer which resulted in his death. His plan was to conduct thorough tests of motors, propellers and the various materials which enter into the construction of an aeroplane as well as the materials from which balloons are made.

There is a strong possibility that the instruction flights which were scheduled to take place early this month at College Park, Md., in which Lieut. Frank P. Lahm and Lieut. Benjamin D. Foulois were to acquire the art of flying the Wright aeroplane, will not take place until early in the Spring. This possibility is largely due to the length of time consumed in arranging for the leasing of the grounds, and then because of the time consumed in clearing the grounds of obstructions and building the shed for housing the aeroplane.

Wilbur Wright, who had determined to teach the officers, is to fly in New York during the Hudson-Fulton celebration, and it is therefore doubtful whether he will be able to take up the training of the officers until October. By that time it is feared that the weather in the vicinity of Washington will not afford much opportunity for the training of the officers. Gen. Allen, the chief signal officer, may, in this case, obtain suitable training grounds somewhere in the South. He has already announced his intention of having a permanent aerodrome in one of the Southern states in order that the Signal Corps officers may continue their work throughout the years.

By the time the use of the Wright aeroplane has become established in the army, the Chief Signal Officer will have received reports from the various military attaches of the United States in Europe regarding the progress and the events in aviation in the foreign nations. Together with the report which Lieut. Foulois will make after his return from the aeronautical congress in Nancy, the observations of the military experts will be used to determine the future course of the Signal Corps with regard to the development of an aerial navy for the army.

It is General Allen's intention to issue specifications for an aeroplane later in the year, after the results of the various aviation events have been carefully studied. The requirements for the new aeroplane will be more severe than were those for the Wright machine. They probably will exact that the machine carry a small gun in addition to two passengers. Another requirement to which particular attention is to be paid is that of the motor. Recognizing that the motor is the most important part of a heavier-than-air machine, the Signal Corps officers are devoting considerable attention to that feature.

Lieutenants Bamberger, Winter and Dickinson have gone from Fort Omaha to Des Moines, Iowa, with Dirigible No. 1, which is to be operated there during the military tournament September 20-25, and it is possible that Lieut. Lahm may be sent out for that week.

Lieut. Benjamin D. Foulois, Signal Corps, leaves to-day for the Aeronautical Conference at Nancy, France, where he goes as the official representative of the War Department.

Four men from Fort Omaha, Nebraska, have been added to the Aeronautical Detachment at Fort Myer. The Aeronautical Detachment at Fort Myer is now receiving theoretical and practical instruction in aeronautics daily.

A tract of land containing 160 acres has been leased at College Park, Maryland. A contract was awarded on September 7 for the construction of a house on these grounds for an aeroplane. The aeroplane, Aeronautical Detachment and officers who are to receive instruction in operating the machine, will be sent to College Park as soon as the preparations there are complete.

PACIFIC AERO CLUB'S SHOW

By Cleve T. Shaffer.

THE success of the Pacific Aero Club's Show just held was beyond our expectations. Moving pictures and lectures added to the interest that the machines and models aroused. President J. C. Irvine, in an address told of the Club's formation and its aims to popularize the science and sport of aeronautics. Mr. Jos. Masten, the treasurer of the Club, gave an excellent description of a balloon trip he had recently taken. The trip and experiences were vividly portrayed by pictures thrown on a screen. Moving pictures of the Wrights' and other well known machines were given with explanations by Vice-president Chas. Bradley.

THE EXHIBITS.

The following were some of the exhibits: The balloon "Fairy," 10,000 ft., the smallest man-carrying in this country, weighing 64 pounds, belonging to Mr. A. C. Pillsbury of the Pacific Aero Club and a panoramic aeronautic camera specially constructed by Mr. Pillsbury to use with his balloon. Mr. J. Z. Pozadas, Jr., exhibited a full sized aeroplane in the last stages of completion. He expects to make trial flights very shortly. Capt. P. A. Van Tassell exhibited a pilot balloon. Messrs. Angus Beecher and Carl Wolf exhibited several large-sized kites for photographic work and lantern slides of their triplane glider were thrown on the screen. Mr. Cleve T. Shaffer exhibited his large aeroplane equipped for the show with only a 6 h. p. motor. Models were well represented, prominent among which might be mentioned those of Prof. J. Hidalgo, Mr. Chas. C. Bradley, Mr. Alfred Binritz and A. C. Watkins. Messrs. Zimmerlin Bros. exhibited a 14 h. p. Peugeot motor, weighing 64 pounds.

ACTIVITY IN AVIATION.

Prof. H. La V. Twining, president of the Aero Club of California, has completed his ornithopter No. 2. The machine weighs 100 pounds, has a spread of 26 ft. from tip to tip, each wing being 12 ft. long and 4 ft. wide at the base. Surface about 65 sq. ft., 32½ ft. to each wing. The wings are operated by hand and foot levers. A sweep of 18 in. between hand and foot gives a sweep of 18 ft. at the tips of the wings. Mr. Twining gets a leverage of 5 to 1 at the point where the power is applied; combining this with his weight, he can apply a pull of from 850 pounds to 1,000 pounds on each wing.

He has not attempted a flight as yet, but has had it out three times to test strength and develop weak points.

The wings are made of thin slats of maple trussed, and finally trussed with piano wire. The main body is made of bicycle tubing, ball bearing throughout.

The machine runs on bicycle wheels and the idea is to run along the ground by beating the wings; when sufficient speed is attained the machine is supposed to rise in the air by displacing the center of gravity to the rear.

There is no tail, the fore and aft stability being obtained by a change of center of gravity. The lateral stability is obtained by beating one wing more than the other when necessary. If one wing is held still and the other is moved, it will cause the machine to turn. Displacing the center of gravity forward by leaning forward, causes it to pitch downward. Displacing the center of gravity to the rear by leaning backward, causes the machine to pitch upward.

The wing is covered on both sides by cloth sewed to the ribs which are first swathed in cloth. It makes a very strong effective wing.

Jos. Bettencourt, Bartram Aber and John Driver, of San Leandro, are experimenting with a 35-pound glider of their own make.

A. L. Smith completed the repairs on his aeroplane and expects to have it reassembled with motor in place for trial at Ascot Park shortly.

The Pacific Aero Club has challenged the newly organized Oakland Aero Club to a balloon race during Portola week. The challenge was accepted by Prof. A. Van Der Naillen of the Oakland Club.

F. O. Andreae, who is now located in Pasadena, intends building a full-sized machine. In regard to same he states:

"My latest machine will be lighter than Curtiss' apparatus, need 20 h. p. engine, measure 28 ft. laterally, 28 ft. from front to rear. It is neither a biplane nor a monoplane, has no diagonal bracing wires, nor upright struts. It can be assembled quickly, and readily taken apart, and land safely on uneven ground."

Dr. F. O. Cates of Forth Worth, Tex., has taken out a patent on an aeroplane, and will start building at once.

James W. Price, of San Jose, Cal., has just returned to America after touring India, China, Japan, the Philippines, Java and the Straits settlements, with his two balloons, the "Mogul" and the "Mongolia," and a dirigible "Messenger" of 22,000 cu. ft. capacity. Thirty-seven balloon ascensions were made and two airship flights during the year's trip.

People of the Orient, Mr. Price says, prefer to witness the balloon ascents from a distance rather than pay the small gate fee so that the tour was not wholly a financial success.

IN THE WORLD OF AVIATION

QUADROPLANE FLIES.

Wright Brothers Bring Suits.

WILLARD FLIES IN CANADA.

PAPERS have been filed by the Wright Brothers in three separate suits — one against the Aeronautic Society, brought in the Federal Court of the Southern District of New York; one against the Herring-Curtiss Co. and the other against G. H. Curtiss himself, the two latter being brought in the United States Court at Buffalo. The bills of complaint are answerable in October.

The suit against the Aeronautic Society is to prevent further exhibition and use of the aeroplane purchased by the society from G. H. Curtiss, and asks for redress from the profits alleged to have already accrued from exhibitions, on the ground that the machine is an infringement of the Wright United States patent, which is No. 821,393, dated May 22, 1906.

If the suits are brought to final hearing, the result will be the first complete review of the state of the art in patent law, and will settle the exact status of the various stability devices now employed in many aeroplanes. In case the claims of the Wrights are upheld, the infringements abroad have vastly outnumbered those in this country, and no doubt suits will be brought in Europe at the proper time.

The bill in the case of the Aeronautic Society is very general in terms, and it is probable that a more specific one will be demanded by the defendant. As all three suits are similar, it is possible they will be merged. The Society states that in the bill of sale of the machine Mr. Curtiss expressly guaranteed to hold it harmless from any suit which might be brought.

When A. M. Herring of the Herring-Curtiss Co. was apprised of the suit, he said, referring to the Wrights: "They have nothing to take action on."

Eight-Year-Old Girl Makes Aeroplane Flight.

Two successful flights were made on Aug. 27 by the W. H. Martin glider at the Martin farm at Canton, O. Miss Blanche Martin, aged 8, a grandchild of the inventor, was the passenger. Miss Martin had watched the previous flight during the morning's experiments and needed no coaxing to be induced to take the seat in the machine, ready for the trip above the heads of the spectators. On the second flight she was at her place almost before the machine was ready to start.

"That's more fun than a merry-go-round," she said upon alighting after the flight.

She laughed when 30 or more feet above the ground, as the machine soared from side to side in the grasp of the wind.

M. B. Sellers Flying.

M. B. Sellers, whose "step quadroplane" is fully described in this issue, has made about 50 flights thus far at his place in Kentucky. These were short, from 150 to 165 feet, and not high owing to insufficient thrust. The engine is a Dutheil-Chalmers of a nominal 7 h. p. The weight of the machine is 210 pounds. The flights made are incidental to laboratory work to confirm experiments made there. In the towed flights made with this machine, as per previous issues of AERONAUTICS, it was shown that a thrust of 40 pounds is required for sustained horizontal flight.

A Front View of Sellers' Machine

Willoughby Completes Biplane.

Hugh L. Willoughby's biplane is now finished and the motor has had trials. The propeller pull is being increased after every trial. Already, Mr. Willoughby says, the pull is enough to get the machine off the ground. The details are as follows:

Total weight, 975 pounds; spread, 44 feet; front to back planes, 7 feet; lifting surface of both planes, 588 square feet; forward horizontal rudder, 36 square feet; forward vertical vane, 6 square feet; after horizontal rudder, 24 square feet; after horizontal vane, 6 square feet; after vertical rudder, 24 square feet; after vertical vane, 8 square feet. Planes have an angle of 4 degrees with "line of flight."

Spruce, cedar, oak, steel and aluminum have been used in its construction. The surfaces are of unbleached cotton covered with aluminum paint. Aluminum paint also covers wood and steel.

A stock motor from the factory of the "Pennsylvania" automobile is used, generating

30 horsepower at 1,500 revolutions. The only change made was reducing the flywheel from 70 to 30 pounds.

The propeller has four blades of aluminum and steel, running at 1,200 revolutions. It is placed on a short shaft, directly connected, at forward end of machine.

The Willoughby patent steering device is used (for airships of any type), which consists in arranging and operating steering rudders (for steering in the vertical plane) at the forward and rear extremities of machine, so as to cause one rudder to operate inversely with relation to the other.

When the forward horizontal rudder goes up the after horizontal rudder goes up also, and vice versa, elevating the bow of the ship and depressing its stern (or the reverse) at the same time; the wind pressure holding the two horizontal rudders fixed at an angle (without the use of a brake) till a change is made with the steering wheel; also the combining with the after horizontal rudder an after vertical rudder (working like a rudder on a boat), both swinging as a unit on a universal joint.

This after combination rudder has a shape of the rear end of an arrow, with four feathers, giving the smallest amount of head resistance with the greatest amount of steering power.

The distance from the center of pressure of the two planes to the center of pressure of the forward and after horizontal rudders is equal.

Luncheon for Curtiss.

A luncheon will be given Mr. Curtiss on Sept. 22, the day after he is expected to arrive in New York.

Nothing definite has been settled in regard to next year's race. Washington, Los Angeles and other western cities are all anxious to be selected, and no doubt the location will depend largely, after the question of suitable grounds, on which place can promise most in the way of arrangements and prizes.

Luttrell Completes His Biplane.

S. A. Luttrell, in Washington, has finished his biplane and has given the 50-horsepower motor a trial, driving the four-bladed canvas propeller at about 650 revolutions per minute. Mr. Luttrell told a reporter that he had obtained 400 pounds thrust.

The surfaces measure 35 by 7 feet. The propeller is set on a universal joint and is intended to control the vertical and lateral movement of the machine. It is said to have crumpled up on the first test with the big motor. Afterward he took this off, which was a two-cycle affair of his own make, and substituted one of 30 horsepower. The weight of the entire apparatus is given at "about 600 pounds."

Accurate details of the machine are not available.

Wrights Buy 700 Acres.

Springfield, O., Sept. 6.—Wilbur and Orville Wright have purchased more than 700 acres of farm land west of here, near Tippecanoe City, as a site for a park to be used in experiments with aeroplanes.

It is reported that the Wrights intend to erect an aeroplane factory on the land.

Foreign Aeroplane to Fly Here.

J. B. Curzon is looking for a place for some trial flights with a foreign-built aeroplane which, he says, is on its way here, with an aviator. The Hempstead Plains have been investigated, and it is probable that any flights made will be there. He is anxous to have the machine take part in the Hudson-Fulton celebration.

Curtiss to Fly in Chicago.

Preliminary arrangements for Glenn H. Curtiss to go to Chicago have been made by Thomas W. Ryley, of the Queen of the Moulin Rouge Company.

"I received a cablegram from Mr. Curtiss to-day (Sept. 9), from Brescia, Italy, accepting my offer of $8,000 for five successive flights in Chicago, commencing on or about Oct. 20, weather permitting," said Mr. Ryley.

"Mr. Curtiss is to make the flights in the same aeroplane with which he won the international contests at Rheims, France. These will be the first flights of a successful heavier-than-air machine in the West, and I expect 200,000 out-of-town visitors to come to Chicago to see them.

"Several sites large enough to accommodate the crowds have been offered, and the most convenient one will be accepted."

The "Baddeck No. 1."

After the unfortunate accident to the "Baddeck No. 1," built by the Canadian Aerodrome Co., at Petewawa military camp, with the "Silver Dart," it was shipped back to Baddeck for repairs. In the short flights made with it, the Kirkham motor was used. The same motor was placed in the "Silver Dart" in its flight at Petewawa. The "No. 2" is understood now to be about ready.

Aero Exposition at Paris.

Instead of the automobile salon, there will be held this year at Paris, from Sept. 18 to Oct. 8, an "international exposition" under the auspices of the Association of Industrials in Aerial Locomotion, a powerful organization which includes in its list of members all French manufacturers of balloons, aeroplanes, aerial motors, materials—everything connected with or pertaining to the manufacture and operation of every device for navigating the air. The prospectus of the exposition contains an array of French notabilities. It will be held under the patronage of the president of the republic and the respective ministers of foreign affairs, war, the navy, public works, commerce and the colonies, sustained by the prefet de police and other high officials of the municipality, so that the enterprise has the fullest support and influence of the French government.

The exposition will be under the immediate management of an executive committee, of which the president is M. Robert Esnault Pelterie, and the general secretary M. Andre Granet, 62 rue Caumartine, Paris, to whom all applications for admission or space and other correspondence should be addressed.

DEVELOPMENT OF AERIAL LOCOMOTION.

The extent to which the industry of aerial navigation is becoming developed in France is hardly realized by most people who live outside the radius of the aero clubs and the national association of France. Six months ago the builders of aeroplanes in Paris could be counted on the fingers of one hand. Now there are in full operation 15 factories devoted to the manufacture of materials and the construction of aeroplanes of all sizes, forms and designs, besides a dozen or more inventors who are making under cover and more or less secretly individual machines which embody their special and more or less original ideas of what the aeroplane or dirigible airship of the future ought to be. Three papers, established during the past six months, are devoted to aviation; societies, with many hundreds of members among the wealthy and influential classes of French citizens, are working for the encouragement of aerial navigation, and over $300,000 will be given in prizes which will be open to competition during the year.

The coming exposition will mark the close of 12 months of phenomenal progress and interest in all that relates to aviation, and as such will be an event of world-wide interest and importance.

Los Angeles Bids for Gordon Bennett

LOS ANGELES, Sept. 9.—Los Angeles wants the Gordon Bennett international aeroplane race next year. President Booth of the Chamber of Commerce has called a meeting for next week to consider the plans. This move is separate from any plans the local aero clubs may have.

Before the opening of the Rheims meet, Dick Ferris started a movement to secure a second contest and headed a subscription list with $1,000.

Brauner-Smith Biplane Waiting for Motor.

A biplane, somewhat along the line of the Curtiss, has been completed by Pincus Brauner and A. J. Smith, both of New York, and members of the Aeronautic Society. They are now looking for a suitable motor. It is possible that this machine will be on exhibition at the aero show to be held at Madison Square Garden during the Hudson-Fulton celebration.

Miss Todd's Aeroplane Ready.

The aeroplane which Wittemann Brothers have been constructing for a long time for Miss E. L. Todd of New York is now completed, and was exhibited at the Richmond County Fair, at Dongan Hills, Staten Island, Sept. 6 to 11.

Latest Curtiss Motor.

To the 8-cylinder water cooled motor which Glenn H. Curtiss installed in the machine used in France, is due the success attained in the two speed races. This powerful new motor was especially designed and built for these races and, of course, Mr. Curtiss intended to win. He usually carries out his plans.

The weight is but 225 pounds, including the magneto, carburetor, intake pipes, water and oil pumps, and it developed 63 b.h.p. at 1,475 r.p.m. in a test.

The cast-iron cylinders are set "V," 4¼-in. bore by 4 7/716-in. stroke. The water jackets are steel and it is said that on all future motors steel jackets will be used. The hollow crank shaft is nickel steel, low in carbon, and the cam shaft, also hollow, is of machine steel.

The pistons are cast iron and drilled for lightness, wherever a hole is possible to be made. The connecting rods are of forged nickel steel. "Clico" babbitt is used in connecting rod bushings. The piston pins, made of steel hardened and ground, are fastened solid to the connecting rods and run in the pistons themselves, the cast iron of the pistons serving as bearings. The piston rings are crowned inside, outside and on the faces. The clearance is 2/1,000ths of an inch.

The valves are all in the cylinder heads, at 45 deg., actuated by a single push rod and cam. The exhaust valves open at 45 deg. and the inlets at 10 deg. past center. Compression, 92 pounds. The crank case is of McAdamite.

The ignition is by Bosch high tension magneto, gear driven. The plugs are Hertz & Co.

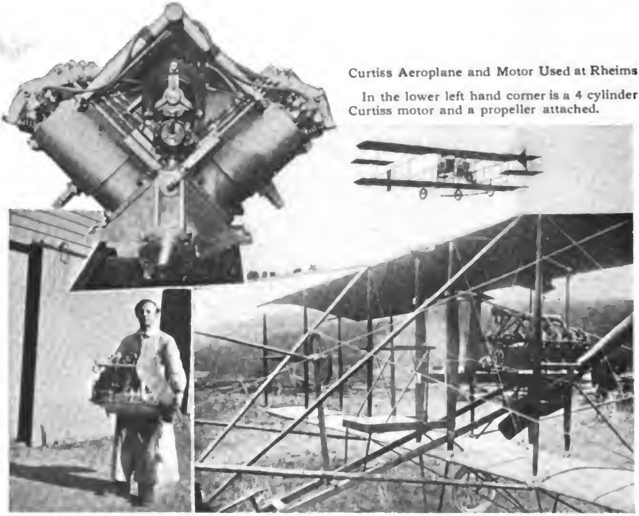
Lubrication is force feed, the oil pump being located in the crank case and operated from the cam shaft. The "Packard" oil is fed through the hollow cam shaft to all its bearings, thence through a passageway, to all bearings of the hollow crank shaft, and from there to the crank pins and connecting rod bushings; the oil then falls into the crank case and returns to its reservoir.

Using a 6-ft. straight line propeller, pitch 17 deg., a pull of 235 pounds was obtained.

George C. Boldt, proprietor of the Waldorf-Astoria, denies through *Aeronautics* the published reports of his purchase of a Wright aeroplane for exhibition in the hotel during the Hudson-Fulton period.

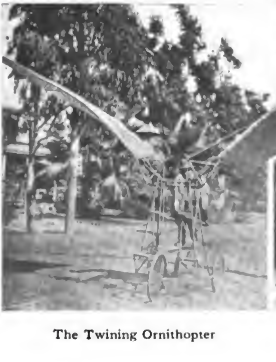
Curtiss Aeroplane and Motor Used at Rheims

In the lower left hand corner is a 4 cylinder Curtiss motor and a propeller attached.

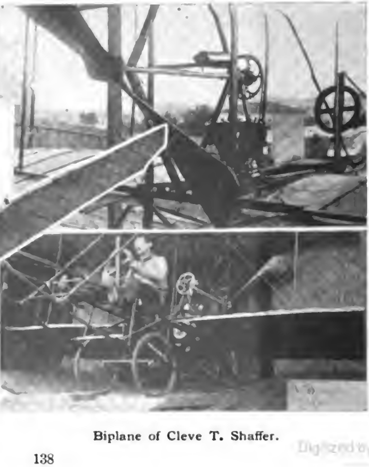


H. M. Benner, Photo.

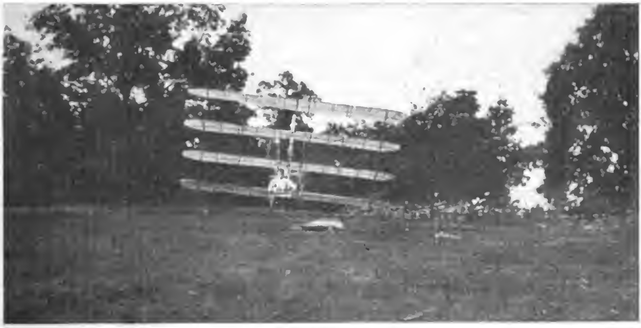
The engine shown is 6 H. P., Curtiss which was used temporarily during the aeronautical show. A large motor is to be fitted. The lower right hand photo shows the control. The propeller is 6 ft., 6½-ft. pitch.



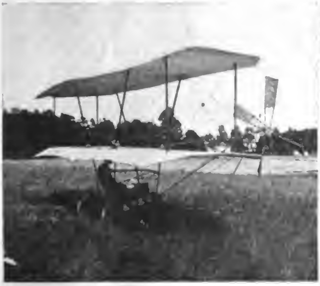
The Twining Ornithopter



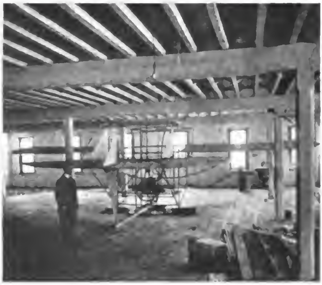
Biplane of Cleve T. Shaffer.



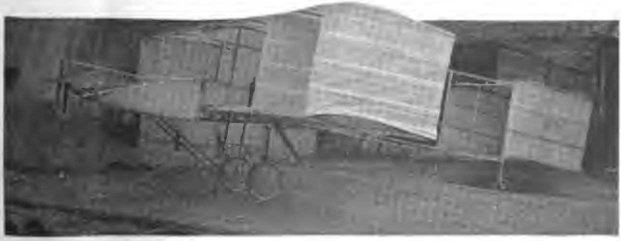
M. B. Sellers in Flight



The Luttrell Machine



Aeroplane of J. H. Smidley



The Rinek Biplane

WILLARD FLIES OVER LAKE.

Falls in Water.

The Aeronautic Society's aeroplane, "Golden Flier," obtained its first engagement at Scarboro Beach Park, Toronto, for the two weeks of the Canadian National Exhibition, August 28 to September 11. Aviator C. F. Willard went up in high spirits. After breaking the cross-country record of the Wrights, he was hopeful that by flying across Lake Ontario he would eclipse the feat of Bleriot in crossing the English Channel. Manager E. T. Tandy had selected a good landing ground at Niagara-in-the-Lake and had made arrangements with several Canadian launches to mark the course, one of which, that of J. Eaton, the big Canadian dry goods storeman, was equipped with wireless telegraphy. But the weather ruled matters otherwise. A heavy gale set in on the night of Saturday, Aug. 28, and for the whole of the succeeding week the wind was blowing furiously over the lake and rarely in less than three directions at a time.

The first lull was on Thursday evening, and the machine was hurried out. A delay then arose in the arrival of the necessary attendant launches. Next a sailing boat anchored right in the line of the getting-off ground. Some time elapsed before that could be signalled out of the way. Then the engine would not start for several minutes, and by that time 7.20 had arrived and brought dark with it.

Willard rose well off the short run down the center of the park, and a great cheer followed him as he mounted into the air. But it was then so dark it was impossible to distinguish sky from water, and when Willard reached the open lake about half a mile out a sudden gust caught him and drove him into the water. Boats made quickly for him and the searchlight from the top of the park illuminated tower showed Willard climbing on to the center of the upper surface.

When the machine struck the water it hit with such force that Willard was thrown over the front control and about 20 ft. beyond. He swam back to the aeroplane, and after levelling her up and finding that the airbags devised for floating her were working satisfactorily, he mounted to the upper surface. The only serious damage was the scattering of the just obtained new propeller, the breaking of a couple of surface ribs, the loss of Willard's spectacles and wetting of his tobacco. Latham, when found smoking a cigarette, must have had a much more agreeable descent than Willard's. Other minor damages were the ruining of a few pairs of boots and suits of clothes, for the staff with the machine all went in up to their necks.

Friday, Sept. 3, was the next day when the wind for a while ceased to rage, but then a dense fog reigned over the lake and even the water's edge could not be seen.

The real chance came on Tuesday, Sept. 7. Willard readily seized it and made a beautiful flight of about five minutes' duration above the lake. This was accomplished with the old propeller known as the Herring propeller, which gives a thrust of only 129 pounds. At Mineola this propeller would never raise the machine in much under a couple of hundred yards, and some fear was felt that the air bag floats attached to the lower surface might further retard its efficiency, a serious outlook since the getting off runway across the park was but 127 yards in length from its extreme end to the dip into the water. But at the dip Willard raised his front control and up the machine went.

It is probable that no flying in the world has been done in space so circumscribed as that Willard has used at Scarboro Beach. The getting off can be accomplished only in one given line of direction, and to ensure missing the great illuminated tower and the open air platform it was absolutely necessary to lay down a trough for the front wheel of the machine to run in. But there was no place at all for landing back on. The strip of sand was too narrow. Moreover, the sand was so soft that there seemed a danger that in landing on it the chassis would be stopped dead while the surfaces would still go on. Willard decided that the only possible landing was on the water and he came back to within two feet of the agreed spot and alighted in about four feet of water. The machine was easily towed ashore and sustained no damage whatever.

Toronto waxed very enthusiastic over the flight, and a great crowd awaited the next day's demonstration. Unfortunately, however, the engine had to be taken to pieces to get out some water, and in replacing the carburetor the thread of the connection tube stripped and the second perfect day was missed.

Willard says that flying over water is extremely difficult because of the greatly increased difficulty of estimating height.

Dr. Orr, of the Toronto Exhibition, had emphatically declared that no one would ever fly above the lake because the wind never blew at less than 35 miles an hour there. Willard managed it anyway.

J. A. D. McCurdy and F. W. Baldwin were invited by Manager Tandy to spend the two weeks at Toronto as his guests, but Mr. McCurdy had to wire back that acceptation was impossible. It was afterwards learned with deep regret that Baldwin was badly hurt in the smash of his new machine, "Baddeck No. 1."

Charles E. Godlove, 20 years old, of St. Louis, claims to have designed and applied for patents on a wonderfully light motor. His scheme is a revolving two-cycle air-cooled affair with Scotch yoke and balls much like the Bailey of Springfield, Mass. It includes lubrication by graphite, special piston rings, injection feeds, etc. He promises 30 horsepower for 60 pounds weight.

Tariff on Aeroplanes.

With all the machines being built abroad and in America, there is no specific provision for flying machines in the Tariff Act on August 5, 1909. The Treasury Department states that aeroplanes "will be dutiable, upon importation to this country, according to the component material of chief value, probably at the rate of 45 per centum ad valorem under the provisions of paragraph 199 of the said act, as an article composed wholly or in part of metal."

Under the new Tariff Law, the Customs officials believe that they will be enabled to permit the entry, free of duty, of foreign flying machines brought to this country for exhibition purposes, and to participate in contests. A bond, however, will have to be given by the importer as a guarantee that the duty will be paid if the aeroplane remains in the United States.

New Aeroplane Prizes.

The Aero Club of America has been presented with a handsome silver trophy, to be known as the "Country Life Trophy," by Mr. F. N. Doubleday, for competition of flying machines during 1910.

Robert J. Collier has also presented the Club a gold trophy of the value of $5,000, to be designed by a leading American sculptor, together with a cash prize of $2,500, for competition of heavier than air machines.

Rules governing competition for both prizes will be drawn up in the near future by the Contest Committee.

William H. Aitken made some gliding demonstrations on Aug. 25 at Huntington, L. I., in connection with the cross-island trolley celebration. Two glides were made from a bank near the Casino of the Chateau Beaux Arts to the beach. In trying a flight with the Wittemann glider towed by a motor boat, the rope got tangled in the propeller and prevented further operations.

W. R. Stewart, of Ensley, Alabama, has nearly completed an aeroplane, the engine now being installed. It is quite possible that a specially built engine will be used. Four hundred square feet of canvas are used and the machine is strong and compact. "There are no new principles—simply a correct application of a few old ones," Mr. Stewart states.

There is a vague rumor going around that the Siegel Cooper Co., of New York, is building an aeroplane to be equipped with two 40 h. p. motors. All attempts to gain information have been unsuccessful.

A. C. Triaca has received as agent, the first "Integral" propeller, made by L. Chauviere, of Paris.

The Herring-Curtiss Co. has entered an order for four aeroplanes, similar to the one flown at Mineola, for A. C. Triaca.

Third Curtiss' Plane Ready.

The Curtiss aeroplane ordered by A. P. Warner is ready for delivery after trial flights, which possibly will be made on Long Island. This was the first machine to be sold to a private individual, and was at the same time the first sold by a distributing agent, the Wyckoff, Church and Partridge Company.

Lefebvre Killed By Fall.

Juvisy-Sur-Orge, France, Sept. 7.—E. Lefebvre, the French aviator, was killed this afternoon by a fall from his Wright machine, in which he was practicing over the aviation field here. M. Lefebvre was alive only a short time after his machine crashed to the ground.

His is the second life to have been sacrificed in mechanical power flight, Lieutenant Selfridge being the first. Gliding flight has taken the lives of Lilienthal, Pilcher, Maloney, Letuss and De Groof.

His first public appearance was in exhibition flights in Holland, as recorded in AERONAUTICS. From there he went to Rheims for the contests.

Death of Captain Hedge.

In the death of Captain Homer W. Hedge, from typhoid fever, on September 9, the Art lost an enthusiastic friend and patron.

Captain Hedge was the organizer and first president of the Aero Club of America, which was started in 1905. He, with A. Leo Stevens, interested the Signal Corps of the regular army in ballooning and, with Captain Chas. De F. Chandler and Major Samuel Rober, at his private expense, made ascensions from Pittsfield in 1906. No doubt his efforts helped towards creating more activity in military ballooning in America. The idea of an aero club was discussed with M. Stevens some considerable time before it took definite shape.

The title "captain," of which he was so proud, showed his rank in the First Signal Corps of the New York National Guard, and he saw active service during the Buffalo and Brooklyn strikes. Captain Hedge and Whitney were the prime movers in the organization of the Automobile Club of America, and he was its first secretary.

He was the president of the Homer W. Hedge Co., one of the largest advertising agencies in the country.

We regret to record the death, on Sept. 1, of Louis Raynaud, of New Orleans, who was struck by a train while returning from work on his aeroplane. Eugene Raynaud, a brother, will continue work on the machine.

THREE AEROPLANES READY FOR TRIAL.

Shneider Nearly Ready With His Second Machine.

Though public interest in the doing at Morris Park has fallen off to some extent, after having become acquainted with the aims of the Aeronautic Society, whose headquarters it is, and the work of some of the members, activity still continues. Those who visit the Park now will find things considerably changed from last Fall and the beginning of May.

People wonder why it takes so long to build machines and test them out, but those who have tried know only too well the difficulties to be met with. Everything must be made special; there are no stock parts to be obtained. Most of the builders are doing the work all alone, and the expected day of trial is always further and further off. When at last the machine is completed, there are the tests of the motor, the transmission, the inevitable weaknesses and breaks to be contended with, which mean alterations and delay. Then comes the practice in running the machine up and down the track. There are still more changes, and in the end possibly the realization that great errors have been made which no modification can rectify and which demand the building of an entirely new structure.

The Raische biplane, which looks like a half brother to the Curtiss, has been ready some days waiting for its motor which has been specially built. This has now been running, and within the next few days will be placed in the machine.

The big Bleriot-like monoplane of S. Y. Beach has been undergoing the usual alterations made necessary by discoveries from running the machine up and down the track. The bolts attaching the propeller to the flange on the shaft have sheared off, chains and propeller broken, but now the machine has been fitted with a new screw and is out again, running with the front wings off. As before, the small planes in the rear with little weight to lift, have brought the tail clear of the ground. Mr. Beach claims now to be able to steer the machine by means of the rudder, even though the front wheels be fixed, as they are, and the rear wheel off the ground. The accidents to the machine in past trials on the track have been caused by the loss of steering power.

The 100-ft. bag for the Riggs-Rice airship has been completed by Mr. Stevens and is now being varnished. C. and A. Wittemann are casting the joints for the framework out of Silverite metal, and the inventors themselves are at Morris Park cutting the steel tubing into proper lengths.

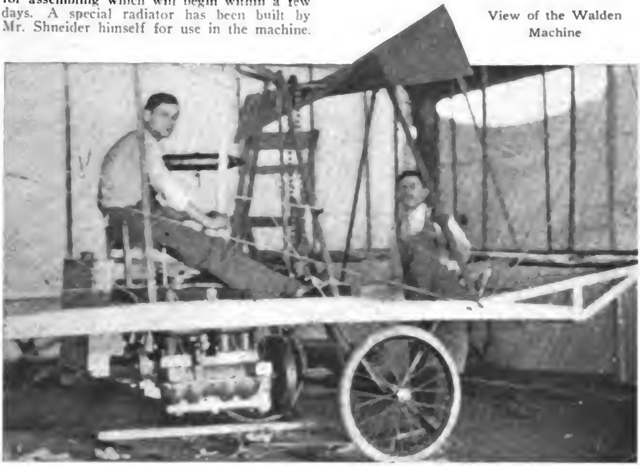
Dr. H. W. Walden is completing his double biplane, and has tried out the motor which is the one belonging to the society for the use of the members. Perhaps the most unique feature of the Walden machine is the manner in which the engine is placed in the machine. Instead of resting on beams, as is the general practice, the motor is slung so to be free to move from left to right. A cable runs from each side of the motor to movable surfaces or "wing tips." Any tilting of the machine causes a resulting pull on one or the other of these cables which start the wing tips in opposite directions to correct instability. The single propeller is fastened to an overhead shaft which is driven by a chain over sprockets in the engine shaft, and the overhead shaft. It was prophesied that the motor would climb up the driving chain and quickly terminate its lease on life, but the trial proved Dr. Walden's expectations. There was no vibration to be noticed although the engine was speeded up nearly to its limit. The first trial broke a sprocket and as soon as this is replaced the machine will be taken out on the track for a run. Dr. Walden is intent on building another machine which will be somewhat different from this one.

The Lawrence biplane is all ready, but is still waiting for a motor, as is the case with the Lindsay machine.

The big "rat trap" of E. R. Ernst has been removed from the Park to a shop where he has the use of a motor.

Dr. Green has suspended all work on his machine for the present.

Frederick Shneider has the central portion of his machine with the chassis together and has installed an Elbridge 3-cylinder 2-cycle motor. The rest of the machine is all ready for assembling which will begin within a few days. A special radiator has been built by Mr. Shneider himself for use in the machine.



View of the Walden Machine

Dr. H. W. Walden's Biplane.

The aeroplane which Dr. H. W Walden has completed at Morris Park might be called a "double biplane," as it comprises two distinct biplanes, each measuring 30 ft. spread by 6 ft. depth, arranged tandem, 18 ft. apart. The total supporting surface is 720 sq. ft.

The angle of incidence of the entire surfaces can be regulated from the operator's seat, this serving for ascending and descending in flight. No other steering devices are used, with the exception of a rear rudder. The single propeller is between the two sets of biplanes, where the main weight is carried as well. The propeller is driven by a 40-horsepower motor suspended on its own shaft. The pendulum, not requiring any extra weight, controls the automatic balance of the aeroplane. This last-mentioned feature serves as well in absorbing all the vibrations of the machine while the motor is working.

The motor is suspended in the machine from a short overhead shaft. On one end of this shaft is a ball-bearing pulley, and at the other end is another ball-bearing and two sprockets. A metal strap from the crank case goes up over the ball-bearing pulley on the short shaft, holding up this end of the motor. On the other end a chain runs over a sprocket fastened to the crank shaft of the motor and over one of the two sprockets on the overhead shaft. From the other sprocket on the overhead shaft there is another chain running to the sprocket on the short propeller shaft, which is mounted on two ball bearings. Both the overhead shaft and the propeller shaft are in fixed positions, while the motor is free to swing from the first-mentioned overhead shaft.

From each side of the motor are cables running to movable "wing tips" which work in opposite directions on any pull on the cable caused by the swinging of the motor.

A further description of this device is given elsewhere in this issue.

The Close Observer.

"A point you might bear in mind, and which is typical of the details in the Wright Brothers' machines, is the detailed way in which all theoretical points have been threshed out. This enables them to put out a very economical machine, both of the motor power and the labor on the part of the operator in handling it, which is quite a factor in the "commercial" machine, and will enable them to hold any distance records they choose. Notice Farman was exhausted at the end of the three-hour flight the other day. I think Wilbur Wright could stay up three hours without undue strain."—*Subscriber.*

AT THE FRANKFORT EXPOSITION

By Harry A. Meixner.

SPECIAL REPRESENTATIVE.

THE Zeppelin II which now belongs to the government was sighted at Cologne, where it is to be stationed, at 8:55 a. m., August 5, and after manoeuvering for some hours landed safely at the shed.

The dirigible had left the exhibition grounds of the Frankfort exhibition at 4:40 a. m. making the trip of 100 miles in about 4 hours. An attempt was made to reach Cologne on Aug. 3, but the balloon came in a furious storm which forced him back to Frankfort, when almost within sight of her destination. By this trip, the run from Fredrichshafen to Frankfort, 260 miles in 10½ hours against a heavy wind on Saturday, Aug. 1, the easy landing at the exhibition grounds, the struggle against the furious storm on Monday, the run back to Frankfort with a broken propeller, the long dispute if the rigid or non-rigid system is better, may be considered to have been conclusively settled. Until now the Zeppelin II is the best dirigible on earth.

To see such an airship manoeuvering is a sight worth travelling hundreds of miles to see. The precision with which she obeys her vertical and horizontal rudder is marvelous. The ship was expected in Frankfort between 3 p. m. and 4 p. m. on August 1, but the arrival at an earlier hour gave Count Zeppelin a welcomed opportunity to show what his dirigible really can do. On sighting the town the ship bowed her head to an angle of 20 deg. from the horizontal, then she went up again into a cloud at an angle of at least 40 deg. and down again into a spiral twist.

Then she comes against the wind and stops immediately above the spot where a flag spread on the ground marks the place where a wire rope sling is firmly fixed in the ground. But it is still too early and she darts off again into the town to show some more manoeuvering. She returns skimming close over the ground, a rope is thrown from the front car and in a short time she is secured to the sling, and floats with the front car almost touching the ground and her back slanting up in the air as lightly and securely as if there were no such thing as wind.

THE ACCIDENT TO THE PARSEVAL.

The various flights of the Parseval balloon came to an untimely end on Aug. 12, 1909. It left its shed at 5:30 p. m., having 11 passengers including the crew on board and rose slowly up in the air. Shortly after leaving the ground the pilot had to give ballast a couple of times and after about an hour he had disposed of it all. It is said that vertical downward currents prevailed, which made it necessary to give ballast all the time. The pilot then decided to return, but it was too late. The balloon was seen coming back to the exhibition grounds, flying dangerously close to the roofs of the houses. After scraping over the roofs and knocking down a few chimneys the pilot decided to land in the street. The control of the balloon, however, was insufficient. The balloon hit first one side of the street, the engines were reversed and the dirigible skidded back to the other side of the street, landing on the roof of a fire engine house, considerably damaging the building. The car came down on the pavement without much damage and the passengers left the car unhurt, but the envelope of the balloon was badly ripped and it will need about 14 days for repairs.

ANTHONY WIRELESS DIRIGIBLE

A SUCCESSFUL trial was recently made of the model dirigible of Mark O. Anthony and A. Leo Stevens, which is started, stopped and steered in any way desired by wireless. The experiment took place at Sandy Hook, N. Y. The model airship will ascend or descend at the will of the operator, and even release a weight representing a shell filled with explosives.

It is not possible at the present time to give all the details of the selective apparatus employed by the inventor, but it will not be a breach of confidence to explain in general how these remarkable results were obtained.

The emitter for producing and sending out the electric waves is not unlike a standard open-circuit wireless telegraph transmitter. It consists of a large induction coil having a single spring make-and-break device operated from the end of the core of the coil, the condenser in the primary circuit is of fixed value and is secured in the base of the instrument. The primary of the coil is wound for low voltages and is best energized by means of a storage battery. The secondary is wound with wire of comparatively large cross-section, and this, together with a pair of Leyden jar condensers which is shunted across the spark-gap, gives a white, ripping spark, which is indicative of very powerful oscillations.

The oscillation circuit which emits the waves is of the open-circuit type, and this is likewise true of the resonating circuit connected with the actuating and selector electro-mechanism set in the framework of the balloon. This experimental balloon,

Parseval III at Frankfort

built by Mr. Stevens, which is 22 feet in length, carried a triangular framework extending its entire length, and to which a propeller is fitted driven by an electric motor. The detector used is of the exhausted coherer type and was made extremely sensitive, while the tapper, constructed almost entirely of aluminum, as were the other portions of the receptor instruments, thus making the entire equipment as light as possible. The wireless portion of the apparatus was designed and built by the Collins Wireless Telephone Company.

The selector device is so arranged that a series of dots, dashes or a combination of dots and dashes will actuate the propeller and rudder mechanism; thus a series of dots will cause a contact to be made which will close the circuit of a small motor driving the propeller and so starts the balloon, while a series of dashes will stop it; a series of dots and dashes will actuate a magnet, and this will shift the rudder, turning the airship to the right, while a series of dashes and dots will direct it to the left, and so on, so that the balloon may be made to go through all the maneuvers exactly as though a human hand in the car was guiding it; yet it is all done by the operator on the ground below, and who makes it do his bidding through the medium of an ordinary telegraph key.

Zeppelin II Landing at Frankfort

"LA GRANDE SEMAINE D'AVIATION"

CURTISS WINS BENNETT CUP

Farman Flies Over 3 Hours

SPEED EVENT TO CURTISS

New World Records

TOTAL RESULT OF THE MANY FLIGHTS IN THE MEET
THE NAVIGATION OF THE AIR BY
32 MEN FOR OVER 45
HOURS.

THE first grand aviation tournament took place on the Bethany Plains in the Champagne district of France, from Aug. 22nd to 29th. Undreamed of feats were accomplished, and the realization thrust upon the entire world that flying is getting almost common. There is no other event by which to compare it. It stands not only the first to have been held, but so far surpassed what was thought possible that it is surrounded with something of a halo.

History was made more rapidly than in any other contest ever held.

There were more flying machines in the Rheims meet, after only three years of real flying history, than were ever in competition in the big automobile cup races.

The Rheims meet marks an epoch in the history of mchanical flight. It showed the wonderful progress made in three short years. Compared with the perfecting of the automobile, the flying machine has advanced more rapidly. The proportion of accidents to machines averaged a smaller percentage than did the troubles of motor cars at the same comparatively early period. Even to-day the long road contests with automobiles bring sundry minor troubles, yet Farman flew for over three hours with an air-cooled engine, generally discredited for its over-heating propensities, without any trouble.

Although this year saw at the Juvisy aerial race course, on the outskirts of Paris, weekly meets, no such variety of types was brought together as at Rheims. The diversity of form, size, weight and power brings out forcibly that there is no one type of flying machine. The range is as great as with automobiles. Six machines were at one time in the air together. Records were made in one day, only to be broken the next.

The meet is also the beginning of the inevitable "track" racing, or whatever it might be called in aeronautic parlance.

CUATISS'S PROPELLER "A PIECE OF WOOD."

The Curtiss machine created something of a sensation—that another so good an aeroplane should come out of America. The "La Vie Automobile" says editorially:

"One single thing in the machine was most surprising, the screw. Under the guise of a screw Curtiss had two flat blades making a pronounced angle with each other. With such an outfit the American was able to make a turn around in 8 min. 9 sec. Then, captivated by the Chauviere screw, he fitted one to the machine, and consequently made it slower, losing over ten seconds. He then put back his old piece of wood (sic), reduced his reservoir and radiator, and made the marvellous time of 7.51."

PRIZES

The prizes for the meet totaled $37,000, and with the conditions and divisions thereof, are related below. Some of the contests were divided into heats, that for dirigibles, for instance, was to have had daily heats for the whole eight days.

GRAND PRIZE OF CHAMPAGNE.—$20,000 total. A contest for distance without landing, with a minimum of 50 kilometers. Six prizes: 1st, $10,000; 2nd, $5,000; 3rd, $2,000; 4th, 5th and 6th, $1,000 each. This prize was competed for in four heats, on the 23rd, 25th, 26th and 27th of August.

SPEED PRIZE.—$4,000 total. A contest for speed over three circuits of the course, or 30 kil. Four prizes: 1st, $2,000; 2nd, $1,000; 3rd, $600; 4th, $400. Competed for on the 22nd, 24th and 29th of August.

ALTITUDE PRIZE.—$2,000. A contest for greatest height. Competed for on the 29th.

PRIZE FOR PASSENGER CARRYING.—$2,000 for the aeroplane covering a circuit of the course with the greatest number of people on board, weighing at least 65 kg. In case of a tie in point of number, speed to decide. Competed for on the 28th.

FASTEST LAP PRIZE.—$2,000 total. 1st, $1,400; 2nd, $600. For the fastest time made over one lap of the course during the meet, i. e., 10 kil. Competed for every day.

PRIZE FOR DIRIGIBLES.—$2,000 to the dirigible making the fastest time for five laps of the course, i. e., 50 kil. Open every day. Competed for on the 27th.

LANDING CONTEST FOR BALLOONS.—$1,000 in prizes in a contest to reach a prearranged destination with free balloons. Competed for on the 26th.

GORDON-BENNETT CUP AND PRIZE.—A cup of the value of $2,500, which goes to the winner's club, and a cash sum of $5,000 yearly for three years. For 1909 the contest was for speed over a closed circuit of 20 kil. (12.43 miles). Though offered by an American, James Gordon-Bennett, proprietor of the "New York Herald," one of the conditions of gift was that the first competition be held in France, and after that in the country of the winning aviator.

The other prizes in the meet were given by famous champagne makers—Heidsieck, Monopole and Olry Roederer, Moet & Chandon, Mme. Veuve Cliquot Ponsardin, Pommery & Greno, and G. H. Mumm, and the Grand Prize of the City of Rheims.

FIRST DAY, AUG. 22.

Though the day started out unpropitious, with the grounds a sea of mud, and the black flags out, denoting flying impossible, the wind died down, the showers ceased, and the program was carried out.

The first event was the elimination of three out of the twenty flyers on the list to represent France in the Gordon-Bennett.

Guffroy, on his R. E. P., failed to get off the ground, owing to the sticking of the wheels in the mud. Tissandier on a Wright was the first to get in the air, but he only stayed up a minute, and was followed by Bleriot on one of the "Cross-Channel" type machines. Latham came next with his Antoinette, but only got a short distance. Lefebvre's turn came next with a Wright, and he covered two laps of the 10 kilometer course. Captain Ferber and others tried, but could not get up. The eliminating trials closed at a certain hour, and Bleriot and Lefebvre were picked as two out of the three. The third was left to be selected according to who made the best time in the speed tests later in the day. Latham got the third place after a brush with Paulhan, in which he made 20 kms. more speed, but in revenge Paulhan went a greater distance.

FASTEST SINGLE AND TRIPLE LAP CONTESTS.

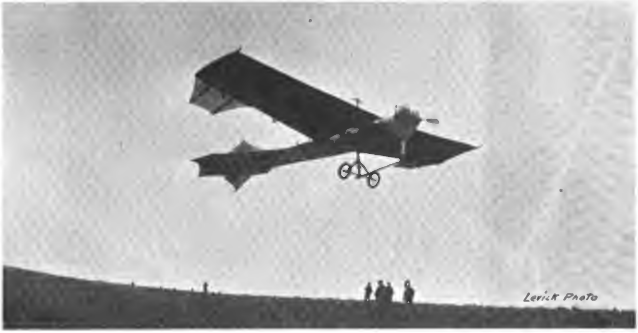
Wind and rain prevented further flights until late in the afternoon. In quick time the machines were then taken out, and the unprecedented spectacle of seven machines in the air at one time was witnessed. There were two contests, one for the fastest time over a circuit of the course, and the speed contest for three circuits. In both, Wright machines flew first, second, third. The longest flight of the day was that of Lefebvre, who remained in the air for 41 minutes. Mr-

(Continued on page 150)

TABLE OF CONTESTANTS AT RHEIMS AND CHARACTERISTICS OF THE MACHINES*

*FIGURES NOT ABSOLUTE—IN MANY CASES APPROXIMATED. PILOTS	MAKER	TYPE	SURFACE IN SQ. METERS	WEIGHT IN KILOGRAMS	STABILIZATION	CHASSIS	MOTOR	CYLINDERS	HORSE POWER	COOLING	No. of Propellers	No. of Blades	DIAMETER IN METERS	R. P. M.
R. Esnault-Pelterie	R. E. P.	Monoplane	20	460	Warping	Wheels	R. E. P.	7	35	Air	1	4	2,00	1400
R. Esnault-Pelterie	R. E. P.	Monoplane	20	460	Warping	Wheels	R. E. P.	7	35	Air	1	4	2,00	1400
M. Guffroy	R. E. P.	Monoplane	20	460	Warping	Wheels	R. E. P.	7	35	Air	1	4	2,00	1400
E. Laurens	R. E. P.	Monoplane	20	460	Warping	Wheels	R. E. P.	7	35	Air	1	4	2,00	1400
P. Tissandier	Wright	Biplane	50	450	Warping	Skids	Wright	4	25	Water	2	2	2,50	450
P. Tissandier	Wright	Biplane	50	450	Warping	Skids	Wright	4	25	Water	2	2	2,50	450
L. Schreck	Wright	Biplane	50	450	Warping	Skids	Wright	4	25	Water	2	2	2,50	450
J. Gobron	Voisin	Biplane	50	550	Automatic	Skids	Gobron	8	55	Water	1	2	2,00	1150
Delagrange	Voisin	Biplane	50	550	Automatic	Wheels	Antoinette	8	50	Water	1	2	2,00	1100
E. de Rue	Voisin	Biplane	50	550	Automatic	Wheels	Antoinette	8	50	Water	1	2	2,00	1100
Paulhan	Voisin	Biplane	50	550	Automatic	Wheels	Gnome	7	50	Air	1	2	2,00	1200
E. Bunau-Varilla	Voisin	Biplane	50	550	Automatic	Wheels	E. N. V.	8	50	Water	1	2	2,00	1200
H. Rougier	Voisin	Biplane	50	550	Automatic	Wheels	Renault	8	55	Air	1	2	2,00	1200
H. Fournier	Voisin	Biplane	50	550	Automatic	Wheels	Itala	8	50	Water	1	2	2,00	1100
Sanchez Besa	Voisin	Biplane	50	550	Automatic	Wheels	Antoinette	8	50	Water	1	2	2,00	1100
Legagneux	Voisin	Biplane	50	550	Automatic	Wheels	Gobron	8	55	Water	1	2	2,00	1150
R. Sommer	Farman	Biplane	40	550	Wing Tips	Wheels & Skids	Vivinus	4	50	Water	1	2	2,60	1200
H. Farman	Farman	Biplane	40	550	Wing Tips	Wheels & Skids	Vivinus	4	35	Water	1	2	2,60	1200
H. Farman	Farman	Biplane	40	550	Wing Tips	Wheels & Skids	Gnome	7	50	Air	1	2	2,60	1100
G. Cockburn	Farman	Biplane	40	550	Wing Tips	Wheels & Skids	Gnome	7	50	Air	1	2	2,60	1100
Comte de **Lambert**	Wright	Biplane	50	450	Warping	Skids	Wright	4	25	Water	2	2	2,50	450
Comte de **Lambert**	Wright	Biplane	50	450	Warping	Skids	Wright	4	25	Water	2	2	2,50	450
G. H. Curtiss	Curtiss	Biplane	22	300	Wing Tips	Wheels	Curtiss	4	60	Water	1	2	1,96	1300
G. Bailly	Antoinette	Monoplane	50	520	Warping	Wheels & Skids	Antoinette	8	50	Water	1	2	2,20	1100
H. Latham	Antoinette	Monoplane	50	520	Wing Tips	Wheels & Skids	Antoinette	8	50	Water	1	2	2,20	1100
R. Demanest	Antoinette	Monoplane	50	520	Wing Tips	Wheels & Skids	Antoinette	8	50	Water	1	2	2,20	1100
Ruchonnet	Antoinette	Monoplane	42	520	Wing Tips	Wheels & Skids	Antoinette	8	50	Water	1	2	2,20	1100
L. Breguet	Breguet	Biplane	50	700	Warping	Wheels	Renault	8	55	Air	1	2	2,50	800
L. Bleriot	Bleriot	Monoplane	22	550	Wing Tips	Wheels	Anzani	3	40	Air	1	2	2,70	500
L. Bleriot	Bleriot	Monoplane	22	620	Wing Tips	Wheels	E. N. V.	8	50	Water	1	2	2.70	500
L. Bleriot	Bleriot	Monoplane	14	340	Warping	Wheels	Anzani	3	25	Air	1	2	2,08	1400
L. Delagrange	Bleriot	Monoplane	14	340	Warping	Wheels	Anzani	3	25	Air	1	2	2,08	1400
E. Lefebvre	Ariel (Wright)	Biplane	40	450	Warping	Skids	Wright	4	25	Water	2	2	2,50	450
X	Ariel (Wright)	Biplane	40	450	Warping	Skids	Wright	4	25	Water	2	2	2,50	450
Fernandez	Fernandez	Biplane	50	240	Warping	Wheels	Antoinette	8	50	Water	1	2	2,00	1100

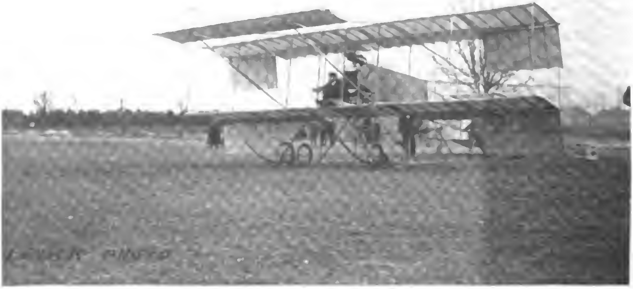
SIX FAVORITES AT THE RHEIMS



"The Antoinette IV."

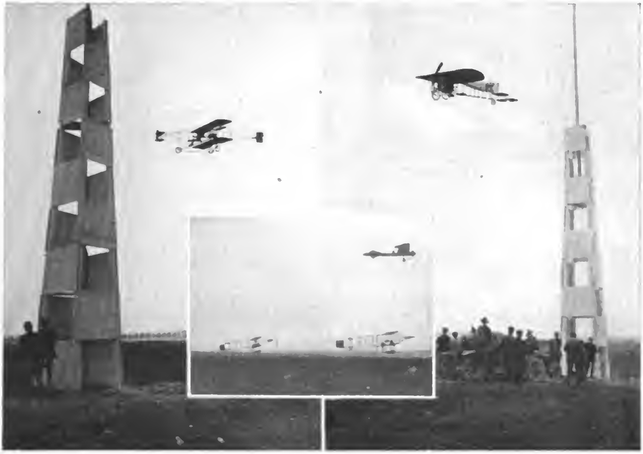
THE EVOLUTION OF A GREAT EVENT

AERONAUTICS' EFFORTS SCORE AGAIN! Aeronautic Society Buys Aeroplane—Curtiss Flies at Morris Park—Mineola—Rheims—Brescia—$14,200 Prize Money—1910 Race in America.

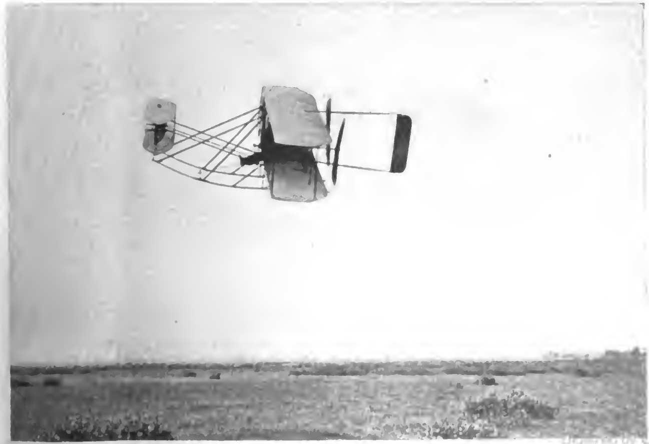


The "Farman III"

INTERNATIONAL AVIATION MEET



Curtiss (upper left) and Bleriot (upper right) Turning the Post. In the Center are two Farman Machines and an Antoinette. *Levick Photos*



A Wright Aeroplane Turning

(*Continued from page 146*)

chines dropped here and there, principally from motor troubles. Enthusiasm was unbounded when the two machines of Tissandier and Bunau-Varilla were flying close together, in a little brush of their own, the pilot of the Wright gradually overhauling Varilla in his Voisin.

In the single lap heat, Lefebvre covered a circuit in 8 min. 58 1-5 sec., with Tissandier and Lambert second and third. In the speed contest three times around, Tissandier got first in 28 min. 59 1-5 sec., Lambert and Lefebvre second and third respectively.

SECOND DAY, AUG. 23.

The weather was bright and clear, and Bleriot got out early for practice spins. The dirigible "Col. Renard" arrived during the morning on a fast trip from Meaux, and Paulhan lapped the course five times. The wind blew up at noon, and Varilla had to land in a field of oats. Fournier got caught in a puff and crushed one wing in landing.

The contests to be disputed were the Fastest Lap Prize and the Grand Prize of Champagne. On this day all those who actually intended to compete in the two other instalments of the Grand Prize had to qualify by making short flights over a prescribed distance. Eighteen actually qualified. Lefebvre and Paulhan made long flights, the latter staying up nearly an hour. Several of the competitors went in for the lap contest, Curtiss beating out Bleriot for first. Lefebvre created a sensation by flying around, under and over one of the other machines, but on this day the magnificent spectacle of several machines in the air at once was not witnessed.

In the lap contest Curtiss was first, in 8 min. 35 2-5 sec., a speed per hour of 69.8 kiloms. (43.34 miles). Bleriot and Lefebvre were two and three. Nine other competitors.

GRAND PRIZE OF CHAMPAGNE.

Paulhan covered 50 kms. in 58 min. 45 sec. and Lefebvre 21.2 kms. in 20 min. 14 sec. The other entrants who qualified were: Bleriot (4 machines), Gobron, Fournier, Lefebvre, Sommer, De Lambert, Cockburn, Latham, Tissandier, Farman, Curtiss, and Latham (2).

The real contest for the Grand Prize came in the other two sections of the contest. Those named above contented themselves with merely qualifying, reserving their forces for the crucial moment.

THIRD DAY, AUG. 24.

Black flags had once more to be hoisted. Late in the afternoon, as the President of the Republic was leaving for his train, the wind died down a bit and the aviators braved the elements.

On this day's card was the fastest lap contest and the 3 lap race. In spite of the wind, Paulhan made a fine flight, lasting 38 min. 12 2-5 sec., covering three rounds of the course, and Latham covered the three rounds a little faster, in 31 min. 2 1-5 sec.

For the lap contest, Bleriot, on the "Bleriot XII," beat the time made by Curtiss the day before, making the circuit in 8 min. 4 2-5 sec., a speed of 74 km. per hour. At the end Lefebvre on his Wright machine succeeded in making a series of marvellous evolutions, remarkable for their audacity and precision.

FOURTH DAY, AUG. 25.

The contests disputed were the Grand Prize of Champagne and the Lap Prize.

The day was not very favorable, the wind at times being quite gusty, varying from 3 to 10 meters per second. A new world's record for both duration and distance in competition for the Grand Prize was made by Paulhan in a Voisin, staying up for 2 hrs. 43 min. 24 4-5 sec., covering 133.6 kilometers. The official timing stopped after 131 kms. Curtiss, Latham and others were endeavoring meanwhile to lower the lap record made by Bleriot the day before. Curtiss lowered his record to 8 min. 11 3-5 sec. Fournier got caught in a whirlwind miniature, and was broken to bits. Fournier luckily escaped injury. Curtiss did not better Bleriot's time, his best being 8 min. 11 3-5 sec. for one round. Latham's flight in the Antoinette was of interest, covering, as he did, 31 kilometers in spite of the wind, for the Grand Prize.

FIFTH DAY, AUG. 26.

The contests for this day were the Balloon Landing Contest, the Fastest Lap Contest, and the Grand Prize.

A new world's distance record was made on this day, when Latham in his Antoinette covered 154.6 kilometers in competition for the Grand Prize, but curiously enough did not beat the duration record, for his time was 2 hrs. 18 min. 9 3-5 sec. This was in the afternoon, after a preliminary morning warming up of 70 kilometers in 1 hr. 1 min. 51 2-5 sec.

In the morning Bleriot came out with one of his two big monoplanes, of the type "XII," equipped with a 40 h. p. Anzani. He took Leblanc and made the first passenger flight of the meeting, for about three minutes. A landing was made for adjustments, and he then took up a mechanic for five minutes.

Legagneux, on Ferber's Voisin machine, made a circuit, and Delagrange made several short flights in a Bleriot. Sommer, after several evolutions, made a round, and then Curtiss made three, the longest flight made by him up to this time. Bleriot then made several trials, followed by Cockburn in his Farman for a round. Bleriot took Leblanc around the course once in the Bleriot 40.

After Latham's longer flight, De Lambert in his Wright machine journeyed for 116 kilometers. The time was 1 hr. 52 min. This put him third on the list for the Grand Prize.

Other flights were made during the afternoon, but familiarity has bred contempt, and it seems useless to relate them.

On this day Latham lessened his time for a single lap down to 8 min. 32 3-5 sec., and stood third for the prize.

SIXTH DAY, AUG. 27.

On the card for this day were the Grand Prize, the Single Lap Prize and the Dirigible Prize.

Farman was the feature of the day, making on the third successive day new world's records for the Grand Prize. Not only did he beat the distance record set up by Latham the previous day, but also stayed in the air the longest time of anyone yet. His official distance was 180 kil., and the time 3 hrs. 4 min. 56 2-5 sec. His actual distance was 189.5 kil.

Breguet was out, and succeeded in making a short flight. Here, in making a turn, a gust caught him and he was thrown down. Then followed several short flights of Bleriot, Varilla, and Gobron and Paulhan.

AEROPLANE AS A "TAXI."

Later, Bleriot brought out one of his big machines. One of his friends who was in a hurry to catch a train was bemoaning his fate. Bleriot, however, bundled him into his aeroplane and took him seven kilometres to Witry, where he dropped him only a few yards from the station.

Paulhan's chances for the Grand Prize were cut short by an unique incident. Just as he had left the round he saw Delagrange coming head-on only a short distance away, and to avoid what looked like a fatal accident he instantly dove his machine down, breaking the front portion on hitting the soil.

Toward noon Bleriot made four turns (40 kils.) of the course, making three of them in 30 min. 39 1-5 sec.

While Farman and Sommer were flying, Latham started out, and the spectacle was seen of three machines one above the other, going the same way past the grand stand. After covering 116 kilometers Latham was obliged to stop. Nevertheless, the time he made for 30 kilometers, 26 min. 45 sec., assured him a good place in the Speed Contest.

Although this was intended to be the sixth heat for the Dirigible Prize, no contest had been heretofore held during the week. The "Col. Renard" sailed once around the course in 15 min. 39 3-5 sec. The Zodiac made evolutions for an hour.

Other flights in the afternoon were: Sommer, four circuits in 41 min. 43 sec.; Bleriot, 1 turn, 11 min. 52 sec. Delagrange made a superb flight at a great height, covering 50 kil. in 55 min 27 1-5 sec. At last Curtiss again lowered his time for the single lap in 8 min. 9 1-5 sec., but did not get back to first place, and finally Rougier made a fine flight at a great height, and Lefebvre made evolutions in the darkness for half a score of minutes.

SEVENTH DAY, AUG. 28.

Curtiss Wins Gordon-Bennett.

With Curtiss weather to favor the aviators, the Gordon Bennett was the big event, with the seventh heat in the Single Lap Contest of somewhat lesser interest. Curtiss, with a smaller gas tank, covered one circuit in 7 min. 55 2-5 sec., beating Bleriot's former best time by 9 sec. Then followed the finals of the Gordon Bennett. The aviators and their respective countries were: France—Lefebvre, Bleriot, Latham; England—Cockburn; America—Curtiss.

GORDON BENNETT.

Curtiss started first, and the impression was that his speed was wonderful. In fact, the spectators felt that all records were being broken. His time for the second round was 7 min. 53 1-5 sec., a mean speed of 76.7 kil. per hour. His official time for the two rounds, the prescribed 20 kils., was 15 min. 50 3-5 sec., a mean speed of 73.6 kils. per hour (45.7 miles). This was getting close to Orville Wright's speed of 47.4 miles an hour in the official flight at Washington this last summer.

Lefebvre, in his turn, tried, but could not do better than 20 min. 47 3-5 sec. Bleriot then came on, but the wind had meanwhile risen, and despite a magnificent speed in the first round, he was able to do the two in not better than 15 min 56 1-5 sec. Latham was the next to try, making several turns of the course. The time for the two was 17 min. 32 sec.

The "Col. Renard" made a circuit of the course, but did not improve its first time.

PASSENGER PRIZE CONTEST.

The Passenger Prize caused some interesting competitions. Lefebvre started off first with one passenger, covering 10 kil. in 11 min. 5 4-5 sec. Then came Farman, who first made a trial with one passenger and then took up two. With a weight of 130 kg. for the 2 passengers aboard he flew easily 10 kil. in 10 min. 39 sec., and ended with a fine landing. He then made several "aerial promenades" with various persons.

FASTEST LAP CONTEST.

Bleriot, who could not digest his defeat by Curtiss, lightened his machine as much as he could and started on a flight. He traveled at great speed, and was able to cover one turn in 7 min. 47 4-5 sec., at a mean speed of 76.95 kil. per hour. This gave Bleriot the honor of the fastest speed ever officially made, and put Curtiss back to second again. Towards evening there were witnessed some good flights by Rougier, who has been daily improving, Varilla, and Paulhan, who made a first trial with his machine repaired after the accident, with a short flight by Breguet.

EIGHTH DAY, AUG. 29.

Curtiss Wins 3-Lap Race.

This was the day of accidents. Breguet and Bleriot managed to break their machines up in good shape. After Bunau-Varilla had made some evolutions, Bleriot started off for the three-lap Speed Prize. It was expected that he would make excellent time. As he was rapidly disappearing down the course and was almost lost to sight, a cry went up from the multitude. The little white spot was seen to disappear in a jet of flame and smoke. The apparatus was completely destroyed, and Bleriot was burnt, though not seriously.

Then came the turn of Breguet. He started off well, and flew several hundred meters when his machine seemed to lose its equilibrium and descend. The extremity of one wing hit the ground at full speed and the machine turned partly over so that the tail stuck straight up in the air.

Breguet was thrown out in front, but met with the usual aviator's luck and was unhurt.

THREE-LAP SPEED PRIZE.

In the afternoon the three-lap Speed Contest was on again, and Curtiss made the 30 kil. in 24 min. 15 1-5 sec., beating the time of Tissandier by 4 min. 44 sec., but because of a tenth penalization for not having contested on the two first days, the time was brought to 26 min. 40 1-5 sec. Latham then made the distance in 26 min. 32 2-5 sec. He then mounted another of his machines and made the same course in 25 min. 18 1-5 sec. Curtiss once more started off and made it this time in 23 min. 29 1-5 sec., beating Latham, but one must add 1-10 for penalization. De Lambert ended this contest. His time for the three rounds was 30 min. 34 2-5 sec. This time did not beat his trial of the first day, 29 min. 2 sec

Curtiss 2nd in One-Lap Race.

Curtiss had another try at the single lap, and cut his time down to 7 min. 49 2-5 sec., but could not manage the little item of the other 1 3-5 sec., and had to be contented with second money.

ALTITUDE PRIZE.

The altitudes attained were measured by registering barometers sensitive to every 10 meters, and by trigonometrical calculations.

Farman started first for this, and gradually got to a height of 110 meters.

Latham started in his turn, describing a large circle, and staying up a long time, reached a maximum of 155 meters. The figures do not mean anything. It was necessary to see the machine way up there to get the impression. Paulhan followed to 90 meters, with Rougier up to 55 meters.

Finally Bunau-Varilla made a magnificent flight of 100 kil. and Rougier covered 90 kil. The curtain fell on the last act of this magnificent event, which took place in the most perfect fashion in the midst of delirious enthusiasm and without any very serious accident.

DIRIGIBLES GO 50 KIL.

The only day on which the dirigibles covered the whole 50 kilometers was August 29. Both went the whole route, the "Col. Renard" doing it best in 1 hour, 19 minutes, 49 1-5 seconds. The "Zodiac" was not far behind with 1 hour, 25 minutes, 1 second.

To reward the mechanicians of the various machines, a special race was gotten up in which Varilla covered 70 kilometers, Rougier 50, Sommer, Ferber, De Lambert and Delagrange 40, 20, 10 and 10 kilometers, respectively.

> I want to congratulate you most earnestly upon the excellence of September *Aeronautics.* Any man who says it was not a "crackerjack" simply does not know the flying field. You covered every corner of it, and covered it well.—*Subscriber.*

FINAL RESULTS OF THE MEET.

Grand Prize of Champagne, Longest Distance.

1. Farman, 180.9 kil., 3 hr. 14 min., $10,000.
2. Latham, 154.5 kil., $5,000.
3. Paulhan, 131 kil., $2,000.
4. De Lambert, 116 kil., $1,000.
5. Latham, 111 kil., $1,000.
6. Tissandier, 111 kil., $1,000.

Sommer, Delagrange, Bleriot, Curtiss and Lefebvre were the other competitors.

Speed Prize, 30 Kilometers.

1. Curtiss, 25 min. 39 1/5 sec., $2,000; real time, 23 min. 29 1/5 sec.
2. Latham, 26 min. 33 1/5 sec., $1,000; real time, 25 min. 18 1/5 sec.
3. Tissandier, 28 min. 59 1/5 sec., $600; no penalization.
4. Lefebvre, 29 min., $500.

Lambert, Latham, Paulhan, Varilla and Sommer "also ran."

Prize for Altitude.

1. Latham, 155 meters, $2,000.

Farman, Paulhan and Rougier also competed.

Prize for Passengers, 10 Kil.

1. Farman, two passengers besides himself, one turn in 10 min., 39 sec., $2,000; with one extra in 9 min., 52 1/5 sec. Lefebvre with one took 10 min., 39 sec.

Single Lap Speed Prize, 10 Kil.

1. Bleriot, 7 min. 47 4/5 sec., speed 76.95 k. p. h., speed record of the world, $1,400.
2. Curtiss, 7 min. 49 2/5 sec., $600.

Latham, Lefebvre, Farman, Tissandier, Legagneux, Paulhan, Delagrange, Sommer, Cockburn and Varilla also competed.

Prize for Dirigibles, Speed for 50 Kil.

1. Col. Renard, 1 hr. 19 min. 49 1/5 sec., $2,000.
2. Zodiac III, 1 hr. 25 min. 1 sec.

Gordon-Bennett Race, Speed for 20 Kil.

1. Curtiss, 15 min. 50 3/5 sec., $5,000.
2. Bleriot, 15 min. 56 1/5 sec.
3. Latham, 17 min. 32 sec.
4. Lefebvre, 20 min. 47 3/5 sec.

Mechanician's Prize.

1. Bunau-Varilla, 100 kil., $400 and $100.
2. Rougier, 90 kil., $200 and $90.

New World's Aviation Records Made.

The longest distance, longest time, fastest time, highest altitude and best three-man flight.

Individual Scores.

Aviators	1sts	2nds	3rds	4ths
Latham	1	2	2	0
Curtiss	2	1	0	0
Farman	2	1	0	0
Bleriot	1	1	0	0
Lefebvre	0	1	0	3
Paulhan	0	0	2	0
Tissandier	0	0	1	0
De Lambert	0	0	0	1
Rougier	0	0	0	1
Aeroplanes				
Antoinette	1	2	2	1
Curtiss	2	1	0	0
Farman	2	1	0	0
Wright	0	1	1	4
Bleriot	1	1	0	0
Voisin	0	0	2	1

THE BRESCIA MEET

On September 8, the aviation meeting at Brescia, Italy, opened, to continue to the 20th. Many thousand spectators gathered around the field, but were disappointed by the poor showing. The ground was uneven, rough, and landings were hazardous.

In qualifying for the Grand Prix, Bleriot, after a short flight, collided with a tree and broke a propeller. Anzani, on a Voisin, started well but also broke a propeller in landing. Lieut. Calderara in the Wright machine got up in the air, but smashed his rudder. Curtiss made a short flight in the morning and one in the afternoon, with more success than his competitors. For the Grand Prix, the conditions provided that each contestant must cross the line every day for five days.

September 9.—Short flights were made by the contestants in the Grand Prix race for five times around a 10 kilometer course. Curtiss crossed the line in this to avoid penalization, then taking part in the short start contest, leaving the ground after a run of 90 yards. He subsequently bettered this after a run of 80 yards in 8 1/5 sec. This prize was to have been given only on condition that start be made within 60 yards, but as no entrant was able to do this, the minimum was made 100 yards. Curtiss was awarded first prize of $600.

MM. Leblanc, Anzani and Bleriot made short flights. Rougier on a Voisin made a good flight lasting 12 min. 10 sec. at 100 m. height in competition for the height prize. Leblanc in his Bleriot monoplane got started in 9 3/5 sec., thus getting second, $400.

Sept. 10.—No flights made this day and the crowd became angered and unruly. The troops had to quell the disturbance.

Sept. 11.—Again the people were disappointed, but just before the close of the day Curtiss came out and covered 50 kil. in 49 min. 24 sec. in contest for the Grand Prix. Rougier reached an altitude of 116 m. in the altitude contest, though it was after the time limit.

Sept. 12.—Last day for the Grand Prix. Rougier started out and covered the 50 kil. in 1 hr. 10 min. 18 sec. The first prize, $6,000, was awarded to Curtiss for his flight of the day before, with the second to Rougier, $2,000.

Curtiss then entered for the altitude prize and went up to 51 m., but Rougier got this for going to 100 m. the second day of the meet. Lieut. Calderara won the passenger carrying contest, taking Lieut. Savoia aboard. Curtiss also succeeded in taking Signor d'Annunzio, the famous author, aboard for a short flight, a remarkable performance for so small a machine.

Bleriot made several brilliant flights, but did not compete for the Grand Prix.

Prizes Offered at Brescia.

Sept. 13.—Bleriot left to-day, Rougier remaining with the others for further flights.

Grand Prix de Brescia: $6,000 first, $2,000 second, $1,000 third. Contest for speed over 100 kil., or twice around a 50-kil. course.

Prize Modigliani, for altitude: $1,000 first, $600 second, $400 third.

Contest for Passenger Carrying: $600 first, $400 second.

Contest for Short Start: $600 first, $400 second.

Contest for 1 Kil. (Open only to Italians): $600.

Dirigible Speed Contest: $1,000 first, $400 second.

As we go to press the cables announce the awarding of the Grand Prix, as a race for 50 kil.; whereas the advance rules called for 100 kil. Official figures will, of course, be given in the next issue.

WRIGHT AND CURTISS TO FLY IN HUDSON-FULTON

MAY ENCIRCLE THE CITY.

Three Airships in New York-Albany Trip.

CAPTIVE BALLOON A FEATURE

NEW YORK, Sept. 15.—Wilbur Wright and G. H. Curtiss both have signified their intention of giving public demonstrations during the Hudson-Fulton celebration, Sept. 25 to Oct. 9. Contracts have been signed and it is now definitely settled that the flights will be made.

Governor's Island has been offered and accepted for the starting place and sheds. The preliminary flights made over and about the Island will constitute an impressive and instructive illustration of the application of the aeroplane for scouting and defense from an army post or fortifications, and it should prove not only instructive to those on and about Governor's Island, but also prove useful in educating the "Solons" at Washington to the needs of the army and navy in this direction, and have effect upon appropriations for aeronautical purposes.

Wilbur Wright's contract calls for his remaining in the air at least one hour, or the making of a flight of at least ten miles, but New Yorkers have a surprise in store for him in an event which will be carried out by Mr. Wright should the weather and other conditions render the proposed demonstrations possible. This will be a wonderful feat in the present state of the art.

The Curtiss contract calls for a flight from Governor's Island to Grant's Tomb and return, and it is expected that he will also surprise the natives of New York and their guests by a very impressive and spectacular flight. It is possible, also, that both aeroplanes may fly back and forth across the Hudson near Grant's Tomb while the marine pageant is passing up the river.

Governor's Island is an excellent location for the start, as there is now a large level space made by filling in part of the bay. The new extension when completed will comprise 110 acres; already about 96 acres have been filled in. The only objection will be the winds which may prevent flights according to exact schedule, as has been the case in Washington, D. C., and at the various contests and flights abroad.

Curtiss will use a machine specially equipped with floats in order that it may not sink if he descends into the water; and Wright one of the several machines already built at Dayton. Mr. Wright at first contemplated fitting this up with suitable floats, but he finally decided that there was not one chance in fifty that he would come down in the water, and if he did his machine would float five or six minutes anyway, giving time for the rescue of himself and machine. He would wear a cork jacket, and if the machine did sink it could readily be fished up again.

There has been some doubt expressed regarding the eatry of Glenn H. Curtiss in the Hudson-Fulton celebration flights, but the following leaves no doubt that Mr. Curtiss and Mr. Wright will both fly:

William J. Hammer, Secretary of the Committee on Aeronautics of the Hudson-Fulton Celebration Commission, stated yesterday that he had received a letter from Curtiss, dated Paris, Sept. 3, in which Mr. Curtiss, while reiterating his wish and purpose to make the flights in New York under his contract with the Hudson Fulton Celebration Commission, and especially the flight from Governor's Island to Grant's Tomb and return, asks that certain modifications be made in the contract signed by him on August 4. These suggested modifications are not vital, or even very important. The principal one relates to the time of the second payment under contract.

Mr. Hammer said: "As soon as Mr. Curtiss arrives, and he advises me that this will be on the S.S. 'Kaiser Wilhelm II' September 21, the Aeronautic Committee will take up his suggestions with him, and as the Commission wishes him to make the flights, and he has expressed himself as wishing to do so, I think after consultation with the Hon. James M. Beck, Chairman of the Committee on Aeronautics, that there should and will be no difficulty in adjusting any differences with Mr. Curtiss. If there should be, the Committee need only stand upon its contract signed by Mr. Curtiss, under which he could not legally or honorably, therefore, refuse to fly. The Commitfee is proceeding with the erection of both the Wright and Curtiss aeroplane sheds on Governor's Island.

"Mr. Wilbur Wright has advised the Committee that he will arrive in New York with his machine on the 18th, and then be ready to carry out his contract."

The Aeronautic Committee of the Hudson-Fulton Celebration consists of the following representative men: Hon. James M. Beck, former assistant attorney-general of the United tSates; Hon. William Berri, editor, Brooklyn Citizen's Union; Hon. Theodore P. Gilman, former Controller of the State of New York; Peter Cooper Hewitt, a well-known scientist and engineer, grandson of Peter Cooper and son of former Mayor Hewitt of N. Y.

To this committee has been added Major-General Leonard Wood, commanding the Department of the East at Governor's Island. He is heartily co-operating in the proposed plans for the flights at Governor's Island and elsewhere. Wm. J. Hammer is Secretary of the Committee.

General Wood has appointed Col. Samuel Reber of the Signal Corps to assist Mr. Hammer in his preparation of the system of visual and audible signals to be used in informing the people of New York and surrounding country of the day, hour and minute of the proposed flights.

Dr. Julian P. Thomas proposes to fit the wind-wagon he used at Morris Park with pontoons and take part in the marine parade up the Hudson. It will be remembered that the apparatus made a speed of nearly 30 miles per hour on the track. The wheels and some of the framework, of course, must be removed when it is placed on a cigar-shaped float.

New York to Albany Airship Trip.

For the New York *World's* $10,000 prize for the best time from New York to Albany, three airships have definitely entered and paid their entrance fees and one man has his fees on the way covering his entry of an aeroplane.

Captain Thomas S. Baldwin will use his dirigible with which he has been making ascents this summer. George L. Tomlinson, of Johnstown, N. Y., will use a dirigible similar to the Baldwin ship, on which both he and Baldwin have worked to bring up to first class. Horace B. Wild, of Chicago, promises another, up to date in every respect, with steering planes and all the latest novelties in style.

The starting place has been selected just west of Riverside Drive, between 119th and 120th Streets, and the Albany finish line is an imaginary one three miles in length, drawn from the wireless tower in Ten Eyck Park to the Capitol.

The committee in charge of the event consists of Col. John Jacob Astor, Arthur Billings, Charles M. Manly, J. Parke Channing, J. C. McCoy, A. H. Forbes and J. L. Ten Eyck, who will look after the Albany end.

Trials will be made at the most propitious time during the celebration. Any contestant may make as many trials as he likes, upon proper notice to the committee.

(*Continued on page 164*)

FOREIGN LETTER

Cody Makes New Cross-Country Record—Long Distance Airship Ascents a Feature of the Month—New Dirigible and Aeroplane Speed Records—$175,000 Receipts at Rheims—High Altitudes in Balloon Ascents—Clement Bayard, Republique and Zeppelin III Have Mishaps—Wright Flying in Berlin—Wellman Polar Airship Has Accident—Scores of Aeroplanes Bought.

COUNTLESS are becoming the experimenters in aviation in every country, particularly in France, and it is daily more impossible to even attempt the chronicling of every little jump. The world has advanced so rapidly this past year that events have a new significance. That which was the wonder of the world such a short while back is now the commonplace; we must progress, letting those things now of lesser importance take their proper place in the world's routine. As they assume greater and greater value, so will they be treated.

In the future I shall generalize on many occasions, with the advantage that I shall be able to go more into detail, perhaps, in the items of major worth. A. R. O.

WELLMAN AGAIN FAILS.

On August 15 the Wellman polar airship "America" started on its second ascent for the North Pole. Everything went well for some miles until the big guide rope containing the provisions for the journey broke away. The ship was brought down from the high altitude to which it immediately jumped, and was finally towed by the Arctic steamer *Fram* back to its shed. Wellman promises to make another start next year.

This was the third attempt of his to reach the pole via airship. The beginning was in 1906, but the season advanced too far before all was ready. The following year a start was really made, but in a heavy storm the ship became unmanageable and was driven to shore. In 1908 no start was made, but improvements and preparations were made for the trip of 1909, which has now terminated so unfortunately. Now that Cook and Peary, or Peary and Cook, or neither of them, have gained the mark, will Wellman continue?

Austria.

An M. Urbanek, at Prague, has built a machine in which the surface is increasable at will. In America, I believe, Peter Cooper Hewitt has ideas of a reefable aeroplane.

Austria, which has seemed to be outside the aero field, is to follow Germany and will build an aerial fleet. It is known that a Parseval of 1,800 cu. m. is to be delivered at the end of September subject to the fulfillment of the following conditions: 1, a trip of 10 kil. covered twice in a given time; 2, a trip of 240 kil. with a fixed destination, not in any specified time, but in a wind of at least 6 m. per sec.; 3, ascension to 1,000 m. altitude, followed by a trip of at least 40 kil.

England.

Cody is the principal figure just now. Ridicule has turned to praise. With the changes made in his machine, he has made during the last month rapid strides. Beginning the second week in August he made various successful flights of 2, 4 and 5 miles, even taking as passengers on different occasions Col. Capper and Mrs. Cody.

He has installed a larger motor, an 8-cylinder ENV of 80 h. p., and altered the structure. New wood propellers of 4 in. greater diameter and 1 ft. 9 in. more pitch have taken the place of the old sheet metal ones. The engine is level with the main lower plane and is located between the two center struts. A passenger's seat is fixed to the same spars above and behind the driver's seat. Cody has done away with the tail and the wing tips, though a loss of speed in turning is the result. He will try to carry three passengers besides himself, and has in anticipation a trip in stages to Liverpool.

On the 8th of September Cody flew for 1 hr. 3 min., covering over 40 miles cross-country. He flew over valleys, over the barracks and circled the spire of the village church. Several army men took successive two-mile rides with Col. Cody, returning each time to the start.

The Government's airship, "Baby," has had some more trials. The top fin has been discarded and the propellers have been placed in a lower position on each side of the car and there is a new steering plane in front.

The "Daily Mail" offers a second prize of $500 for the second crossing of the Channel, and $5,000 to the aviator making the greatest total distance across country between Aug. 15 of this year and Aug. 14 of next, in France or England.

Sir Hiram Maxim, I hear, is building again, for the first time since the successful experiment with his huge structure some twenty years ago.

Baron de Forest offers $20,000 to the British subject who makes the longest distance across the Channel with a British-built flyer, not across the Atlantic as has been erroneously announced.

A. V. Roe is still practising with his small-powered aeroplane, making short flights. E. V. Hammond is experimenting at Brooklands's motordrome, and A. E. George, a well-known automobilist, has his own machine under construction at Bath.

It is expected that the Wright aeroplanes acquired by the British War Office will be delivered this month, and that Mr. Orville Wright will superintend the official trials at Aldershot in October.

In a very confined space, Roe has made some 80 flights, some of which have been 300 yards.

The Lebaudys are constructing the airship for England to be paid for out of the "Morning Post" fund. The "Daily Mail" is having the shed constructed at its own expense.

Harold and Frank Barnwell have been able to accomplish a flight of 80 yards at Stirling, Scotland, on the first trial of their experimental machine, using a wooden track for starting.

The two parallel supporting surfaces of this biplane measure 48 by 8 ft., 7½ ft. apart. Steering up and down and laterally is by means of a double-surface front control. This is mounted at the end of two booms fastened to the four central struts. This rudder is divided into two cells by three vertical surfaces. Wing tips are placed between the main planes just inside the ends. One end of the wing tip pivots on the outermost strut and the other end pivots at the intersection of the guy wires, as in the Curtiss machine. This cellular control is pivoted similar to that of the Curtiss machine.

The engine is a regulation automobile motor, weighing about 460 pounds, which drives by chain two 2-bladed wood propellers, 10 ft. diameter by 10 ft. pitch. With the engine stationary, each, I am told, developed 300 pounds thrust. These propellers were made from data obtained in laboratory experiments with model propellers.

The whole machine is mounted on 2 wheels, tandem, directly in the middle. Midway of each wing is another small wheel for protection in landing. The aviator sits in front of the radiator, behind which is the motor.

A novel method in staying the structure is the use of steel tape instead of wire for the purpose of reducing head resistance.

France.

Sportsmen are buying aeroplanes as fast as they can be turned out. Anzani, the maker of Bleriot's motor, has bought a Voisin and has already made flights. Jean Gobron is another, rapidly jumping from flights of a few hundred meters up to one of half an hour. Baratoux has a Wright; Sivet a Voisin which he broke up the first time out. M. Grou on a machine of his own make was caught in the wind and upset. Mortimer Singer is another Voisin student. M. Ruchonnet is a new Antoinette pilot who has flown 15 min. at a time.

G. B. Cockburn, an English purchaser of a Farman, started in the first of August and rapidly became proficient enough to cover the 10-kil. course at Rheims, and another flight of half an hour.

Captain Ferber has been fairly consistent in his trials, but he has not developed anything more sensational than a 20-kil. flight. Roger Sommer, in a Farman, has rather been the star performer for fast progress. Since breaking Wright's record he was content with a little over an hour and a quarter at Rheims.

Rougier has made his debut in a Voisin with an Itala motor and has made his 50 kil., with a creditable showing at Rheims in the altitude contest.

Fournier, of automobile racing fame, has a Voisin and has flown for 41 minutes.

The R. E. P. has not been heard of much of late, but Guffroy took it out for the Rheims meet and broke his propeller after a kilometer flight two days before the opening.

Alfred Leblanc, the balloonist, began the first of August with a Bleriot, type XI. Short flights were made, with incidentally a broken propeller to relieve the monotony.

Delagrange has another of the cross-Channel flyers and began learning the second week of the month.

This month also saw the trial flights of the monoplane "Blanc"—only short ones. It has 30 square meters surface fitted with a 7-cylinder REP 35-h.p. motor.

Etienne Bunau-Varilla in a Voisin fitted with an 8-cylinder ENV motor, covered the Rheims course. With another machine, Gnome motor, he competed at Rheims, his best experience being one of 70 kil.

Lefebvre, the young French engineer who came to Rheims for the races from exhibition flights with a Wright in Holland. He competed in the single lap, the triple lap and the Gordon-Bennett, doing fairly well, though his longest flight lasted 29 minutes. His promising career was sadly cut short through the accident to his machine.

From the middle of August to the 22nd there was feverish activity in preparations and practice for the eight-day meet. Everyone who had a machine was out, either at the Betheny plains, at Issy, Chalons or Juvisy.

Even Bleriot himself, after arriving in France from his Channel flight, being received and banqueted at the Aero Club, was not averse to getting a little practice at Issy. At Juvisy a street has been named "Avenue Bleriot."

The accident to Count Lambert's Wright the end of July, when his right wing gave way after flying a mile and the aeroplane smashed to bits, did not keep him away from Rheims, where he took part in the single and triple lap races and made 116 kil. in the Grand Prix.

Farman practiced at Chalons the first half of the month, with a longest flight of 48 minutes.

Paulhan spent the first half of August at Dunkirk giving exhibitions averaging a quarter hour each, with the exception of a 1 hr. 37 min. flight on the same day that Sommer was beating Wright's duration and distance record.

The "Zodiac III" was completed and sent to Rheims to compete against the big "Col. Renard." The "Zodiac" is the third of the "demountable" sporting airships put on the market this spring, with Count de la Vaulx as sort of demonstrator.

On August 23 the "Clement Bayard" left its shed at Sartrouville to make the last ascent under the conditions imposed by the Russian Government, which required staying 1 hour at 1,200 meters altitude. It made a new altitude record, 1,550 meters, for dirigibles, and stayed up more than two hours above the conditional 1,200.

NEW DIRIGIBLE ALTITUDE RECORD.

In descending, the guide rope was dropped and seized by the workmen, and the motor was stopped, but the wind suddenly blew up and the men, many inexperienced and in number only sufficient for handling in fair weather, gradually let go one after the other as the big airship swayed in the breeze. Finally, with the memory of La Patrie fresh, the pilot Capazza started up the motor again to get back to the place from where it had drifted. Then the motor stopped and the dirigible was in the position of a free balloon and was carried by the wind. The pilot sought to land at a favorable spot, narrowly missing a train.

CLEMENT BAYARD SUNK.

One of the ropes caught in a pile in the Seine, the bag inclined toward the water and the car sank into the water, dragging all but the rear end of the envelope in with it. After several hours the ship was entirely recovered from the river.

REPUBLIQUE MAKES LONG TRIP.

"La Republique," after the military evolutions of July recorded last issue, with the Ville de Nancy at Longchamps, the "Republique" continued to make instruction ascents. On the 4th of August it covered the course imposed in the conditions of the Deutsch dirigible cup, of the value of $2,000, to be given the first airship to accomplish a course of 200 kil. passing over certain cities without a stop and with certain other conditions. The ship actually covered 210 kil. in 7 hr. 13 min., the average speed being 30 k.p.h., though it attained 47 k.p.h. during one stage of the journey from Chalais-Meudon, to St. Germain, Senlis, Meaux, Melun and Chalais. After this trip the instructions ascent began again.

On Sept. 3 the "Republique" started from Chalais for the maneuvers at La Palisse. Near Nevers, 148 miles from Paris, the motor went wrong and the envelope buckled back of the car so that it looked like a back-broken horse.

NEW DIRIGIBLE SPEED RECORD.

The "Colonel Renard," the new dirigible constructed by the Astra Co. for the military authorities, on August 23 left its shed at Beauval to go to Rheims for the dirigible contest, arriving there without accident and with a favorable wind in 1 hr. 32 min. The distance is 100 kil., so that the speed of 71.24 k.p.h. (44.24 miles) was attained. So far as records show, this is the fastest time that any dirigible has made.

The ship has 4,300 cubic meters capacity, is 64.75 meters long, 120 h.p.

THE NEW GOV. AIRSHIP "LIBERTE."

The end of August the new French Government airship "Liberte," built by the Lebaudys, made its first trials at Moisson.

The new airship is of a type analagous to the "Republique" and the "Russie." It measures 63 m. long, capacity 4,200 cu. m. The 135-h.p. motor drives two 2-bladed propellers on either side of the car, which is midway the length of the envelope. The speed realized was 53 kil. per hour.

Just in front of each propeller is a biplane horizontal rudder for steering in a vertical direction. It will be stationed at Belfort.

AERO RACE MEET PAYS BIG.

"The Car" is responsible for the statement that the gate money at Rheims was $15,000 for the first day and the total was nearly $175,000, while the prize money amounted to only some $40,000. The railroad company carried 40,000 to 50,000 passengers daily. One million words were sent out by correspondents in despatches, and the receipts at the post office were some $50,000.

NEW SPEED RECORD.

Saint Cyr, France, Sept. 13.—Santos Dumont has broken the aeroplane speed record to win a wager of $200.

With the aeroplane "Demoiselle" he made a flight to-day across country to Buc, a distance of between eight and nine kilometers, in five minutes, at a speed of about 90 kilometers (55.8 miles) an hour.

M. Paulhan put the aeroplane to a new use this afternoon. Wishing to pay a visit to the Chateau Taintignies, some miles distant from the aerodrome, he pointed his machine in that direction and flew leisurely across country, settling gently near the entrance to the chateau.

After chatting for a short time with his friends the aviator remounted the machine and flew back to the aerodrome. He was absent for about an hour and a half, and tremendous enthusiasm greeted his return.

Germany.

GROSS AIRSHIP ON LONG TRIP.

The trip of the "Gross II" on August 4, from Tegel to Berlin, was remarkable for its length, 465 kil. Buffeted by the winds, it made part of the course twice.

During the month some experiments were conducted with wireless telegraph on the "Gross II." For three days communication was had between Nanen and Reineckendorf and at the same time with Frankfort, a distance of more than 500 kil.

Baron de Caters has been able to give some exhibitions with his Voisin on the grounds of the Frankfort Exposition, but without anything remarkable. His longest flight has been only 17 minutes, at Issy.

The "Clouth" and "Parseval III" dirigibles are at Frankfort, where on August 22 the Clouth made its first ascent. It has a capacity of 1,700 cu. m., is 42 m. long, with a maximum diameter of 8 m. The car holds three men. A Clouth 50-h.p. motor drives two wood propellers placed above the car as in the "Parseval III."

THE PARSEVAL III.

The capacity is 6,700 c. m., length 70 m., two motors NAG of 100 h.p., operating two screws which are reversible, placed to the rear of the car.

The ship is put at the use of the public for trips at a rate of $50 an excursion of one to two hours. On a trip on August 12 it met with what might have been a bad accident. (See article by Mr. Meixner, this issue.—Ed.)

ORVILLE WRIGHT FLYING AT BERLIN.

The first week in September Orville Wright began his flight for the German Wright Co. at Berlin. On the 7th he flew for 52 min., and on the 10th he remained in the air 1 hr. 2½ min. Capt. Hildebrandt, who visited the States in 1907, Frau Hildebrandt, Prof. Hergesell, of the Meteorological Observatory, and Mr. Wright's pupil, Capt. Englehardt, were passengers.

ZEPPELIN III ON LONG TRIAL TRIP.

The "Zeppelin III" has been completed and made its first ascent on August 25. On the 27th it set out for Berlin, but had to make three intermediate stops for motor trouble and propeller breaking. On the 29th it arrived at Berlin, landing later at Tegel in the presence of the Emperor. On the return journey another propeller broke, damaging the envelope and forcing the dirigible to land for extensive repairs. It regained Friedrichshafen on Sept. 2. An uninterrupted run was made from Bulzig of 23 hours' duration. A speed of 21 miles an hour was attained during part of the trip.

On the 11th of September the "Zeppelin III" sailed from Friedrichshafen to Frankfort, 220 miles, repeating the performance of the "Zeppelin II" on July 31. The time consumed was about 17 hours.

Italy.

30,000 FEET HIGH IN BALLOON—ITALIAN RECORD.

From Turin on August 9, Guido Piacenza and Luigi Mina ascended in the cotton balloon "Albatross" of 2,280 cu. m., prepared for attaining a high altitude. Only 1,200 m. of hydrogen were put in the balloon. Oxygen tanks were taken along, together with a complete set of instruments. After reaching 5,000 m. altitude the oxygen was used. Here, also, the barometer was set back to zero. A height of 9,200 meters (30,176 ft.) was reached during the 2¼-hr. journey, which ended 105 kil. from the start. This is the Italian record. The French record is 8,850 m., held by Balsan in a 3,000 cu. m. balloon using coal gas. The record of the world is held by Profs. Berson & Suring, 10,500 m. (34,440 ft.), who used an enormous balloon of 10,000 cu. m., inflated with hydrogen.

The Italian military dirigible made ascents during August. On the 21st a sudden landing was made in Lake Bracciano, due to defective valves.

Calderara will not seem to stay away from the aeroplane. He and Lieut. Savoia have been making flights up to 40 minutes with the Wright machine rebuilt and modified since the accident by the Engineering Corps. It has an especially powerful motor now, and it is said the speed has been 70 kil. per hour.

Japan.

Correspondents say that several aeroplanes are now under construction in great secrecy in Japan. One built by Yoshino-Suke Takaska is said to have been tried out successfully and to have given a speed of 50 miles an hour. It is hardly likely that the Japanese will remain long behind.

Roumania.

Roumania has now entered the lists. Lieut. Goliescu, an army officer at Bucharest, has built a monoplane in the city and has succeeded in making several short jumps. It is said that he has found the secret of low speed in huge wings of great spread resembling those of an eagle.

Russia.

Van der Scronff has a Voisin at Odessa and has been able to make some short flights. The Lebaudy airship "Russie" has arrived and the name has been changed to "Lebed," whatever that may be.

Sweden.

At a meet organized by the automobile club in Stockholm the first part of August, Folmer Hansen, who served his student time at Juvisy, made some short exhibition flights. Legagneux made a couple 5-kil. flights with a passenger, and later made several of 2 to 5 kil. with Hansen as passenger.

Switzerland.

ATTEMPT TO BALLOON OVER MT. BLANC.

Edward Spelterini, the celebrated Swiss aeronaut who has made many cross-Alps ascents, with three companions left Chamonix on August 8 in the balloon "Sirius," of 2,000 cu. m. capacity, in an endeavor to get over Mt. Blanc. The wind, however, was not favorable. The crossing of the Alps was accomplished, nevertheless, the balloon landing at Pizzo, Italy, a distance of 150 kil., after 6 hr. 45 min. in the air. The greatest altitude attained was 5,700 meters (18,696 ft.). An altitude of 5,000 m. was held for over 2 hours

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E. B. Weston, his daughter, Miss Delight, and A. Leo Stevens will make an ascent in Mr. Weston's new balloon, the "Delight," from North Adams the last part of this month. Miss Weston is attending Smith College and the balloon will be shipped East for this occasion. The initial ascension with it was made the first week in September from Canton to Somerset, Ky.

G. L. Bumbaugh sailed his airship at the Indiana State Fair, beginning Sept. 6.

News In General

Missouri N. G. Has Aero Corps.

On August 20 an Aeronautic Section of Company "A," Signal Corps, National Guard of Missouri, was enlisted to take up military ballooning and any other aeronautic work that might come within the scope of this department of the Signal Corps. The paramount feature of this organization lies in the fact that it is the first volunteer balloon corps in this country, and approaches the plan recently adopted in England.

The Aero Club of St. Louis have assigned two balloons, one 40,000 cu. ft. capacity, and one of 76,000 cu. ft. capacity, for the exclusive use of the corps. This Aeronautic Section will inflate and handle all the balloons that are sent up during the races which occur in October of this year. One of the balloons in the championship race will be piloted by a member of this corps, namely, Mr. H. E. Honeywell. There are 15 men in this section at present, and of this number 12 are graduates of colleges or technical schools.

The corps was organized and is now commanded by First Lieutenant Chester E. Burg.

Y. M. C. A. to Open Aeronautic School.

To meet the rapidly growing demand for men trained to build, repair and operate aeroplanes and dirigible balloons and also to prepare others for the sport of flying, the West Side Young Men's Christian Association, 318 West 57th St., New York, on October 13 will open an evening course in Aeronautics under the direction of Wilbur R. Kimball, the well known electrical expert and authority on aviation.

The School of Aeronautics owes its existence to the experimental or test course of lectures given at the West Side Branch last spring. The interest shown in these lectures indicated that there was a real demand for aerial training even though, at that time, the Wrights had not made their wonderful flights and Bleriot had not crossed the Channel.

"The successful flights of the Wrights, Bleriot, Curtiss, Count Zeppelin, Dumont, Delagrange, Farman and others, have demonstrated the practical possibilities of aero-navigation. "Men with personal knowledge," says the announcement of the school, "of aero science are in demand." The armies of the great nations are striving to develop aerial machines which shall become effective engines of war. Scores of amateurs are entering the air as a means of recreation and need assistants. Professionals are at work everywhere devising new and better mechanisms. Experts declare that it is now only a question of time when flying machines will be commercially practical. This coming demand has already been foreseen by the pattern makers who are preparing for work in the aeroplane field.

The first course of study is designed to prepare owners and prospective owners for participation in, and enjoyment of aerial sport; to train aero pilots and mechanics in the principles of management; to teach practical men the principles of construction; to aid civil and mechanical engineers who wish to learn the applications of their science to flight and to prepare writers, newspaper men, advertising men and salesmen to specialize in the new field.

The outline of the course of study which ten years ago would have been regarded as the dream of a crank is as follows:

OUTLINE OF COURSE.

Law of Gases—Buoyancy, action under varying temperatures and pressures; the atmosphere, hydrogen; motion; air currents; use of barometer, thermometer, manometer, statoscope, etc.

Resistance and Supporting Power of the Air—Laws of motion and application of force; parallelogram of forces.

Shapes of Surfaces—Planes; curves; solids (square, round, fish-shape); use of each; head resistance

Kites—Malay, Hargrave, Tetrahedral, etc.

Lift and Drift—Mathematical relationships between the two; simple rules for determining ratio between sustaining and propelling elements.

Soaring and Gliding Flight—Ways of birds in the air; some historical gliding machines and their records.

Screw Propellers—Ratio of thrust and torque; proportions determined by work to be performed; number of blades, pitch, speed.

Motive Power—Steam versus gas power; size, weight and performance of practicable types of motors; fuel consumption.

Power Driven Models—Actual demonstrations of working models of aeroplanes, helicopters and vibrating wing machines; designs of various types.

Man-Carrying Apparatus—Working dimensions of apparatus capable of sustaining man; materials used; strength necessary as shown by tables; arrangement and adaptation of various parts; general data.

Superposing Surfaces—Comparison between monoplane and biplane.

Equilibrium—Varying conditions of atmosphere due to whirlwinds and irregular currents; compensation for advancing center of pressure.

Control—Steering apparatus of various forms; means of control rudder, auxiliary planes, etc.

Transmission Systems—Direct connection; gearing; chain drive; cable and flexible shafting.

Dirigible Balloons—Size and material of envelope; gas systems of suspension and application of power; problems of steering and equilibrium.

No attempt will be made in the first course of ten evening lectures and demonstrations to give students actual flying practice, though this phase of instruction may develop later. There will, however, be ample work in flying models and in constructing miniature planes of various types. For experiment with models, the big athletic field adjoining the building at 57th St. and 8th Ave. will make an admirable model aerodrome in the heart of Manhattan. It is probable that a number of contests between various models will be held in this field. In addition the students will study gas practice in the automobile and motor boat school testing laboratories and will be taken to various flights in nearby aerodrome.

The purpose of the school of aeronautics as described by Edward L. Wertheim, the Educational Director, is to fit men for the coming industry connected with the building and handling of aerial machines.

"A new industry," said Mr. Wertheim, "is rapidly being created and just as the automobile brought employment and wealth to hundreds of thousands who were wise enough to fit themselves for that industry, aerial navigation now promises great rewards to those with foresight enough to prepare themselves for its several branches."

St. Louis Aeronauts Qualify Quickly.

St. Louis is more progressive than cities in the effete East, for there balloon pilots are made, almost "while you wait." The applicant starts out of St. Louis and then descends as soon as the open land is reached. Here a smoke is enjoyed and a new trip begun. This novel method has not yet been worked out fully, as on no occasion have more than three landings been made. It is likely, however, that this diffidence will speedily be overcome.

Aero School Moves.

Albert C. Triaca has now located his aeronautic school at Garden City, Long Island, N. Y. A considerable sum is being spent in remodeling and fitting up a large building for the use of the school. A housing shed will also be erected. Adjacent to the school begins the great Hempstead Plains, where flights of a dozen miles in a straight line can be made with scarcely a single obstruction.

Flying Machine Supply Houses.

As a sign of progress, there is noted within a month the entry into the aero field of automobile supply houses for the furnishing of aeronautic material.

The Universal Auto Supply Co. of 1900 Broadway, New York, was the first to realize the new industry in this manner. They now have in stock many of the important parts used in construction work.

The Pedersen Manufacturing Co., 636 First Ave., New York, a well-known house of long standing, is making a bid for machine work.

The machine shop of the L. B. Repair Co., 239 West Fiftieth St., is another which is in a good position to do machine and repair work of all kinds. They are experts on motors.

Magnetos and other accessories may be had from L. G. Duquet of 107 West Thirty-sixth St.

The E. J. Willis Co. of 8 Park Place, New York City, which was originally a bicycle supply house when the auto first came into prominence, and which was one of the first to take that line up, and which also carries motor bicycles and motor boats, is now adding to its already extensive business an aeronautic department, the entire fifth floor being devoted to that purpose. The firm is at present negotiating for several European motors which have shown up very well at the late meet at Rheims. It is also importing bamboo of all sizes direct from China, and carries a fully line of balloon silk, steel tubing, sheet and bar aluminum, etc. In short, everything used in the construction of balloon, dirigible or aeroplane. It is hoped by the first of the year to be the largest flying machine supply house in the country. This house intends to carry on an extensive mail-order business, and anyone that is building, or contemplating building, a flyer, should write. Agencies of all kinds are solicited.

Incorporations.

American Aeroplane Co., Wilmington, N. C.; capital stock, $125,000. Incorporators, W. B. Cooper, F. A. Bissinger, Dr. J. H. Drehr, Dr. R. S. Bellamy, C. H. Dick, C. W. Polvogt, E. Picard, R. C. Platt, E. P. H. Strunk, Albert Schild, J. Brick and David Palmgren. To develop invention of David Palmgren.

San Diego Aeroplane Co., San Diego, Cal.; capital stock, $200,000, of which $33,000 is said to be actually subscribed.

The International Dayton Aeroplane Club, Dayton, O.; C. J. Needham, G. H. Grim, C. I. Mattorn, F. P. Gaddis, G. R. Wells, C. C. McLean, A. E. Estabrook and John C. Eberhardt.

International Aerial Navigation Co. of Texas; capital stock, $1,000,000 Incorporators, Dr. Frederick J. Fielding, Dr Fred Terrell, V. P. Brown.

Ohio's Course in Aeronautics.

It is our intention to take up the study of aeronautics seriously in connection with the regular courses as soon as the new building of the Ohio Mechanics' Institute is completed.

During the interim, that is within the present school year, it is intended to collect all the facts that can possibly be gathered concerning the progress of the subject of aerial navigation, carefully tabulating them and acquainting the students with the men who are prominent to-day in the experiments that are being made, and become familiarized with the various types of aerial conveyances, motive power employed, etc., at this time. In all probability models will be constructed which, in the new building, may find a place in a special section of the industrial museum. In other words, it is the present plan to lay the foundation for more serious work a year hence.

Gordon Bennett International Balloon Race.

The Gordon Bennett International Balloon Race for 1909 will be held October 3 at Zurich, Switzerland. America will be well represented by Mr. E. W. Mix, a pilot of the Aero Club of America, using the balloon "America II" piloted by J. C. McCoy in the international balloon race from Berlin last autumn.

The French contestants are: Mm. Emile Dubonnet, Alfred Leblanc and Maurice Bienaime; German, Dr. Broeckelmann, Paul Meckel and Capt. von Abercron. Italy has entered 3 balloons, Belgium 3, Spain 2, Switzerland 3, England 1, Austria 1, a total of 20.

In addition to Bennett's $2,500, a subscription list reached $6,440 for additional prizes. Besides the G.-B. contest there is a duration and another distance race on Oct. 1 and 2.

All American Events Credited to Aero Club of America

In answer to the question as to whether or not the Aero Club of America receives credit for *all* balloon and dirigible ascents and flying machine flights made in America, even though such may be accomplished by members of clubs not affiliated with the A. C. A., or by individuals alone, it may be of interest to note that the A. C. A., as the sole member of the Federation Aeronautique Internationale in America does receive credit for all the balloon and dirigible ascents in this country. The A. C. A. can have one vote in the Federation for every so many thousand cubic feet of gas used in America and for dirigible and aviation records. No records made in an international contest under the auspices of a non-affiliated club will be considered "official" by the F. A. I. No club can obtain recognition by the F. A. I. except through A. C. A.

Balloons for Advertising.

To Manager Wallach, of the Herald Square Theatre, is due the credit for the most novel advertising New York has seen. To call attention to "The Broken Idol" running at that theatre, in which, by the way, there is a balloon scene, a captive balloon is in use several hundred feet above the theatre, bearing the name of the play. The balloon is illuminated at night by a searchlight. For inflation, tanks of compressed hydrogen are used, furnished by the N. Y. Calcium Light Co. The balloon used has been especially built for this purpose. So much comment has the balloon caused that the builder, A. Leo Stevens, has sold five others for similar work.

St. Louis Ballast.

Probably one of the busiest men in the balloon business at the present time is H. Eugene Honeywell, director of the French-American Balloon Company, at St. Louis. To accommodate the increase in the volume of work he has found it necessary to secure a second shop, which will be known as the "Drying Room." Before October 1 he has 25 balloons of 3,000 cu. ft. capacity each to complete, and besides, a racing balloon to be called "Centennial," of 22,000 cu. ft. capacity. There is no foundation for a newspaper story that appeared recently to the effect that Honeywell was building a "monster" balloon. He will compete with the "Centennial" in the October 4 race of the Aero Club of St. Louis.

The Missouri Motor Car Company, at St. Louis, when filing its corporation papers recently, included the handling of aeroplanes as well as automobiles, and is looking for a good machine to place on the market.

John Berry, while endeavoring to make an ascension from the gas works at St. Louis, August 29, lost his balloon "University City," 78,000 cu. ft. capacity, with which he won the national balloon championship, last June.

St. Louis aeronauts are paying $1 per 1,000 cu. ft. for the best coal gas for balloons. Mixed gas, at the Aero Club of St. Louis grounds, costs 60 cents per 1,000 cu. ft.

The Carrollton (Ill.) *Gazette*, in recording the landing of the "St. Louis III" with H. E. Honeywell and party, concludes: "All four were refined, educated gentlemen, with whom it was a pleasure to converse."

Does the *Gazette* think aeronauts as a class are unrefined and uneducated, or is this merely a refutation of particular assertions regarding the four gentlemen in question?

E. F. Stephenson, of Memphis, Tenn., is designing a 30 h. p. monoplane on which work will begin very soon.

Aeronauts' Busy Season.

Captain T. S. Baldwin and Carl E. Myers were at Worcester (Mass.) fair, Sept. 6-9. Mr. Myers had his captive passenger balloon for day and evening ascents, concluding with a cut-loose passenger trip. The Baldwin dirigible acquitted itself as well as usual, making some fairly long trips with the new type 20-horse-power water-cooled Curtiss motor.

Mr. Myers operated his first airship in Massachusetts at Worcester in 1891. There was a parade around the race track of a thousand high-wheel velocipedes, and only one pneumatic-tire, low, "safety bicycle," and Mr. Myers' aerial bicycle, or "skycycle."

Knabenshue has been sailing around Cleveland, O., while J. C. Mars is in the air at Seattle Exposition.

Jack Dallas was at Ontario Beach, N. Y., during August.

Patent List.

Cæsar R. Bannihr, New York, N. Y., No. 931,026, Aug. 17, 1909. "Aerodart." Toy helicopter consisting of a hub having spring wires attached and carrying on their outer ends suitably inclined blades. The operation is accomplished by spinning manually the shaft supporting the above hub.

Reinhold Schmiechen, Newell, Ia., No. 931,225, Aug. 17, 1909. "Airship," comprising a metallic envelope divided in sections, some of which contain gas and one containing a motor; fans secured at bottom of envelope adjustable as to position, and movable wings on sides, designated "cyclone producers," for propelling ship in any direction.

William Sinclair, San Antonio, Tex., No. 931,966, Aug. 21, 1909. "Aerodrome." More correct term would be "helicopter," since the machine comprises a pair of propellers rotating on vertical axes suspended from a frame. The propellers are encased in open-ended cylinders and formed of alternating flat and inclined sections producing spirals.

Enoch S. Le Fevre, Littleston, Pa., and William D. Le Fevre, Smyrna, Del., No. 932,712, Aug. 31, 1909. "Airship." More specifically a helicopter provided with "vertical-flight propellers" and "longitudinal flight propellers," the propellers of each set rotating in opposite directions. An "aeroplane" is also provided consisting of slats pivoted in a frame so as to open or close.

John Muckle, Kansas City, Mo., No. 932,884, Aug. 31, 1909. "Airship." More specifically a helicopter consisting of "propelling-lifting fans" mounted on opposite sides of body portion. Front and rear deflectors adapted to deflect the air, "fan hoods" for propellers and vertical rudders for steering and stopping in addition to an aeroplane roof are included in this multiple structure.

Joseph A. Rignon, Berlin, Germany, No. 932,999, Aug. 31, 1909. "Airship," consisting of gas bag and a balloonet, having free openings at front and rear. The opening at front being greater than at rear and an "air-propelling organ" opposite the front opening.

Aerial Torpedo Latest in Aero Warfare.

Aerial torpedoes are the latest horror that are about to be added to modern warfare by Emile Berliner, inventor of the graphophone. It is nothing more or less than a small aeroplane carrying a torpedo in place of an operator and provided with an automatic balance and steering device to the same end as a submarine torpedo.

LIGHT-WEIGHT MOTOR DEVISED.

The thing about the device that has given more trouble than anything else is getting a simple and light-weight motor. This problem is now solved and there is a motor in the Berliner shops that will develop 12 horse power on the brake and weighs only 50 pounds. The present motor is very simple in construction, and it is said that it can be cut down 12 pounds without interfering with its efficiency when the next motor is built.

The motor is something of the Adams-Farwell type, with revolving cylinders. These act as a gyroscope to keep the aeroplane steady in the air and make the motor run without the vibration that would shake a small aeroplane to pieces with a motor of the same size and weight of a reciprocating type. It is said that the motor on a light wooden base has been run without any trouble from vibration, and it was run standing still in the sun for half an hour without overheating. It is true that standing still on a long run the cylinders get a little too hot for greatest efficiency, but moving through the air will keep them just right.

MACHINE TO BE A MONOPLANE.

Mr. Berliner has tried out a lot of propellers and has found a pair of light weight and suitable efficiency. This and the motor constitute the chief problems, and, being satisfactorily settled, he is not bothering much about the aeroplane to carry them. The whole installation will be of such light weight that not much wing surface will be required. The machine will be a monoplane. The automatic balance is worked out so that it is simply a question of putting the machine together. The aeroplane will carry a gasoline supply for a flight of half an hour. It is pointed out that the aerial torpedo is much cheaper to construct than a submarine torpedo, and that it is more accurate at the same range.

The laboratory is well satisfied with the work it has done on the revolving cylinder engine, and is constructing another of 66 horse power for Mr. Berliner's helicopter, and this will be tried also on the helicopter of J. Newton Williams, who, it will be recollected, was lifted along with his machine at Mr. Berliner's country place a short time ago.

CLUB NEWS

The **Oakland Aero Club** has been formed at Oakland, Cal., with the following officers: President, A. Vander Naillen, Jr.; first vice-president, Dr. C. L. Tisdale; second vice-president, H. C. Capwell; treasurer, Col. Thos. Gier; secretary, Edwin Stearns. The club numbers over 50.

Its first "affair" was a balloon christening of the "City of Oakland," built by Capt. P. A. Van Tassell for the Club. The builder with Prof. A. Vander Naillen, Jr., made a high ascent for the purpose of becoming familiar with the air currents in anticipation of the balloon race in the Portola festival in which the Club has entered its balloon.

The **San Antonio Aero Club** is constantly adding new members. It is endeavoring to pull off a balloon race during the Fair and Auto Meet in October. Dr. Frederick J. Fielding, the president, has just returned from his vacation during which he was present at the Indianapolis balloon race, where he went in the interest of the coming meet at San Antonio, and was also present at the Automobile Races at Crown Point and Indianapolis.

The **Aero Club of America** is arranging for a luncheon to Glenn H. Curtiss when he arrives in this country. He has a contract with the Hudson-Fulton Commission to fly his aeroplane during the Hudson-Fulton celebration. Arrangements are being made for sheds for the Curtiss and Wright machines on Governor's Island where the flights will start.

An aeronautical show is being planned by the Club to be held in connection with one of the automobile shows.

The **Aeronautic Society** meetings at the Automobile Club the last three weeks have been of unusual interest. On each of these occasions a number of models, both power and gliding were shown in flight and otherwise.

On the evening of September 2, the competitions held were intended to have decided the source of contests, but it was found that a number of members had models which they were willing to show if given another opportunity so that the Contest Committee decided to hold the competition open another week.

There was one large monoplane considerably like the Antoinette, with two propellers revolving in opposite directions on concentric shafts which made satisfactory flights nearly the whole length of the great hall. Two more or less successful monoplanes were sent by Mr. Wm. J. Hammer. These were made by the Bates Toy Aeroplane Co., of Dayton. This is the third concern in this country to follow Europe in the marketing of toy aeroplanes. The Aeriole Co., of Germantown, was the first, and then came the H. J. Nice Co., of Minneapolis.

During the past month the meetings of the society have taken on more of a social aspect. The exhibitions of the society, the grounds at Morris Park and the other affairs have previously made the meetings almost entirely of a business nature.

The **Aero Club of Saratoga** (N. Y.), has nearly been formed. The purpose will be to hold exhibitions and flying machine races at the Saratoga Association Park in July and September, 1910. George A. Farnham, proprietor of the hotel American-Adelphi, at Saratoga, states: "Thus far we have been very successful in our undertaking. It is opening up a large correspondence and the details will be carried out to perfection. We are much pleased at the interest manifested and believe that we will have a club that will be second to none in this country. The location and lay of the country here will make this a wonderful place for demonstrations of this kind."

The **Aero Club of New England's** two balloons have done good work this summer making to date, August 30, 21 flights and taking up 68 people, traveling 1,142 miles, air line, and remaining aloft 70 hours and 9 minutes.

The **International Aeroplane Club** listened to addresses by President Needham, Capt. G. L. Bumbaugh, Dr. P. L. Crume and others on Aug. 25. The membership is now above 500 and the slogan is "A Thousand or Bust."

The **Aero Club of Atlanta** is getting busy with gliders. The new autodrome provides an excellent place for experiments with machine already under construction.

The **Aeronautical Society of Canada** is now being formed. There was an informal meeting held on Sept. 1 to discuss the formation of an aeronautical society to be called "The Aeronautical Society of Canada," for the purpose of giving a stronger impulse to the scientific study of aerial navigation and to promote intercourse among parties interested in aeronautics in Canada and to aid with advice and instruction those studying the subject.

The foregoing is but an outline of the aim of the society, but putting it more in detail, it is intended to make arrangements for the reading of papers and their discussion; to get up lectures, both popular and scientific, from time to time, and to issue when possible the proceedings of the society in printed form; to form a library, from which books may be borrowed by members, and, if possible, to arrange for the starting of an aeronautical journal, to be published in Canada, which will be the official organ of the society.

Mr. Logan, the secretary pro tem., says: "It is without doubt an urgent necessity that a

(Continued on page 164)

EXCHANGE

A NEW DEPARTMENT

To the Editor:—

I have plans for constructing a flying machine that I am confident will prove more successful than anything yet on the market. I haven't the money to construct a machine, and would like to find some man or body of men in whom I can place confidence; and to whom I can explain my plans of construction. If I can then make satisfactory arrangements I want to construct a machine as soon as possible.

I will guarantee that I have the best construction of a machine that has ever been constructed—something entirely different from any of those now in use.

WM. R. YEOMANS,
Box 479, Southington, Ct.

FROM SOUTH AFRICA.

To the Editor:

May I explain that I have been studying the different types of flying machines at different periods, and have found one thing lacking with the aeroplane of different makers—yea, even Wright brothers—"excuse me passing a remark, but a fact remains a fact!" Say an aeroplane's engine or motor is started and up goes our aeroplane. Well, all goes right up to the height of 300 or 400 feet, when all of a sudden the motor stops, or the propeller breaks, or the such like—energy power is lost, and of course the aeroplane may rapidly fall towards the earth. I have invented a contrivance to overcome this difficulty, which, when energy power is lost, I can prolong my soaring in the air like a bird with the wings stationary. I shall not exactly explain my method to produce this "soaring effect," but all flying machines that have come to my notice have two faults. The one fault is: The elevating planes are too small and too near the main planes, and should be—well, I shan't explain my ideas, as I contemplate producing a South African aeroplane later. I have a model already which flies O. K. I will send a photo later on of my machine. As far as I am aware, I am the only African "born" who intends to produce a monoplane. With every success to AERONAUTICS,

J. W. N.

E. F. Stephenson, 250 Vance Avenue, Memphis, Tenn., desires to communicate with manufacturers of motors, bamboo, seamless tubing, wire, wheels, propellers, chains, piano wire, turn buckles and fabric.

To the Editor:

I want financial aid to develop a new principle in flying machine ethics. The problem of air navigation is something I have given a good deal of thought to for some years. I think I have developed a device that will solve the problem. The great desideratum of all the flying machines thus far made of which I have any knowledge is to get them in the air easily and successfully, and to land them easily and safely. Of course, the balloon gets up all right, and sometimes, but not always, lands safely. Now my device and plan will get you into the air, and propel you when there, and get you down out of the air, without wheels, skids, weights, tracks, or any other such annoying contrivances. My device is no "Keely motor fraud," but something real and practical. I believe it would prove the "ne plus ultra" of aviation. I would like to communicate with someone who has the means and would be willing to aid in developing my plan. I have not protected my device as yet with a caveat or patent, hence could not disclose its nature. My device could be used for another purpose equally as valuable as air navigation.

O. HARMON,
Oneonta, N. Y.

To the Editor:—

At the suggestion of the Sterling Debenture Corporation I am addressing a letter to you. May I have your attention for a few minutes for one or two hypothetical questions?

If an aeronaut could have a terrestrial globe so mounted that a pointer would indicate his true position, and further, if the pointer would move over the globe as the balloon or airship moves over the earth, and continually point out on the globe the true position of the airship at any instant of the voyage, what would be the value of such an instrument to the aeronaut? Or if in place of the pointer, the globe could be fitted with three graduated circles so adjusted as to indicate latitude longitude and the north point, and the globe could be so mounted as to show the relative motion between the airship and the earth in such a manner as to indicate at all times the true latitude and longitude of the airship as the voyage progressed, what would be the value of such a device to the navigator?

I have invented and patented an instrument that will do the things I have outlined. And I might say in passing that the instrument mounted on a vessel at sea will give the same indications as I have stated above.

With the airship, when the radius of flight extends beyond the knowledge of the aeronaut, or when clouds intervene between him and the earth, the device I have mentioned will be as valuable as it will be to the sailor when approaching a dangerous coast in foggy or stormy weather.

My invention will indicate the north point, and will tell the navigator the number of degrees of latitude and longitude passed over, as readily and with as little effort on his part as his watch will tell him of the time elapsed.

I want to interest capital in the development of this device, and to awaken interest to bring about an examination of my claims before condemning them as visionary and impossible.

S. D. J., c. o. AERONAUTICS.

WANTED.—Capital to build dirigible on new principle, somewhat like Zeppelin; success unquestioned; intimate experience in German airship factories. No brokers.—GERMAN, c. o. AERONAUTICS.

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ASCENSIONS

NOTE.—In each case the first name given is that of the pilot. Pilots are especially requested to communicate records of trips.

WADE AND MORGAN BREAK CLUB RECORD.

DAYTON, July 3.—J. H. Wade and A. H. Morgan, in the "Sky Pilot," to one mile south of St. Mary's, Pa., leaving at 8.10 p. m., travelling all night up to 3 a. m., seven hours. Dist., approx. 156 miles. This is the longest flight made from Dr. J. G. Foltz and W. E. Mast to Ligonier, Pa., Canton. The next is that of Dr. H. W. Thompson. 121 miles.

MODESTO, Cal., July 5.—R. S. Mitchell, F
Unger, and D. W. Tulloch, to Hughson. Mr. Tul
CANTON, July 5.—Dr. H. W. Thompson, W. E
loch was severely injured in landing.
Mast and Harry Naugle, in the "Ohio," to Malvern
Dist., 12 m.; dur., 3 hrs. 5 min.

DAYTON, July 10.—G. L. Bumbaugh, John S McIntyre and Walter Keenan in the "Indianapolis, to 12 miles beyond Kenton.

ST. LOUIS, July 13.—John Berry and Andrew Drew in the "Melba" (25,000 cu. ft.).

ST. LOUIS, July 14.—H. E. Honeywell, C. C. Butler and S. L. Von Phul and three others, in the "St. Louis III.," to Tamaroa. Duration, 3 hrs. 35 min., including one stop.

NORTH ADAMS, July 16.—Mark O. Anthony made an ascension in Mr. Steven's balloon, the "All America," carrying five passengers.

ST. LOUIS, July 17.—H. E. and Mrs. Honeywell, Miss Ada Miller and another woman, in the "Missouri," to St. Mary's, Mo.

ST. LOUIS, July 18.—John Berry and Miss Julia Hoerner, in the "Melba," to 5 m. S. E. of Belleville, Ills. Dur., 1 hr. 30 min.

PITTSFIELD, July 20.—William Van Sleet, Charles T. Fairfield, Prof. Oswald Tower in the "Pittsfield,' to Mooreville, Ct.

NORTH ADAMS, July 20.—N. H. Arnold, W. C. Coughlin, James Batchelder, L. J. Follett, Thos. Callahan and Frank Arnold, in the "All America," to Durham, Ct. Dur., 3 hrs. 15 min.

CANTON, July 24.—J. H. Wade, Jr., Reuben Hitchcock and Albert Schoenberg, in the "Sky Pilot," to Apollo, Pa. Dur., 4 hrs. 32 min. Distance 99 miles.

ST. LOUIS, Mo., July 24.—H. E. Honeywell, H. B. Spencer, James W. Bemis, Harry Hayward, Harry Smith and S. Von Phul made a balloon trip to-day in the "St. Louis No. 3." The party made three landings, the last being near Columbia, Ill.

260 MILE TRIP.

ST. LOUIS, July 25.—John Berry, Paul J. McCullough and John S. Thurman, in the "University City," to Savannah, Mo., after a trip of 260 miles, lasting 11½ hours. The expectation was to beat the Lahm cup record of 475 miles.

ST. LOUIS, July 25.—John Berry, Paul J. McCullough and John S. Thurman, in the "University City," in an attempt to win the Lahm Cup from Captain Chandler, its present holder.

NORTH ADAMS, July 25.—N. H. Arnold and F. P. Beckwith, in the "City of Worcester," to Westboro, Mass.

DIRIGIBLE ASCENT.

DAYTON, O., July 27.—H. H. McGill made an ascent in his dirigible, which resulted in an accident. He had reached a considerable height when his craft suddenly split in two and he lost practically all of his gas. The balloon collapsed and came down in a heap, covering the aeronaut, who was dashed down at a terrific rate. Fortunately, the balloon fell athwart a telephone wire, and McGill, who clung to the ropes, found himself dangling not far from Mother Earth. He was rescued from his perilous position.

RUTLAND, July 27.—William Van Sleet, Charles T. Fairfield and H. C. Carpenter, in the "Mass.," to Barnard, Vt.

PITTSFIELD, July 27.—Dr. S. S. Stowell, Miss Blanche E. Hulse and John P. Manning, in the "Pittsfield," to Shelburne Falls. Dur., 2 hrs. 40 min.

PITTSFIELD, July 30.—William Van Sleet and Robt. McQuillier, in the "Pittsfield."

NORTH ADAMS, July 30.—William Van Sleet, Fred La Franchise, W. H. Nicholas and F. P. Boughton, in the "Mass.," to Monroe Bridge. In preparing to land all the sand ballast was thrown out, and it was found necessary to drop the basket cover and balloon cover. Then Mr. Van Sleet ordered the anchor cut away, but one of the passengers made the mistake of cutting the main anchor rope instead of the lashings. The balloon dropped rapidly, just clearing a patch of woodland and striking hard in a pasture. Mr. La Franchise was knocked out of the basket, striking on his head, but sustaining no serious injury. Before the others could alight the balloon shot far upward, but the pilot succeeded in bringing it down to an altitude of 100 feet when he pulled the rip cord, and again the basket struck the ground with great force. The occupants who had taken to the rigging were sprawled out over the pasture, but all escaped bad injuries.

DENVER, Aug. 1.—Gordon L. Wands piloted on the first balloon ascent of the new A. C. of Colorado.

DENVER, Aug. 1.—Ivy Baldwin and W. W. Wood, from Elitch's Gardens.

DENVER, Aug. 1.—Wayne Abbott, from Lakeside to Louisville, Colo., 22 miles, dur. 1 hr. On landing, balloon got away, but afterwards found 32 miles beyond.

DAYTON, Aug. 2.—H. H. McGill, L. B. Haddock, J. Schauer and Earl Lyons, in the "Dayton."

ST. LOUIS, Aug. 2.—John Berry and Julia Hoerner, in the "Melba," to Barnhart, Mo.

ST. LOUIS, Aug. 2.—S. Louis Von Phul, alone in the "Missouri," to House Springs, Mo.

CANTON, Aug. 4.—Dr. H. W. Thompson, W. D. Miller, and Jesse Snyder, in the "Ohio," to Zoar.

FITCHBURG, Aug. 7.—Charles J. Glidden, Maj. F. S. Burnham, in the "Boston," to Northboro. Dist., 20 m.; dur., 2 hrs. 15 min. This makes 31 ascensions for Mr. Glidden.

BALLOON AND AUTO CHASE.

ST. LOUIS, Aug. 4.—Albert Bond Lambert, Christian Kenny and Harry Allen in the "Missouri." Three landings were made. Following the balloon was H. E. Honeywell in an automobile. The party first landed near Edgemont, where dinner was had. Though the distance covered was small, it was the balloonists' object to make as many ascents as possible. After dinner, Allen, Honeywell, and Lambert's chauffeur, Joseph Hanes, made an ascension, landing at Belleville.

While the third flight was being made Lambert and Kenny followed in the former's car and kept the bag in sight.

Honeywell and his companion landed near O'Fallon, Ill., about 18 miles.

DAYTON, Aug. 5.—H. H. McGill, Leo Browne and John Henne, in the "Dayton," to Waynesville, O. Dur. 3.30.

ST. LOUIS, Aug. 6.—S. L. Von Phul, H. E. Honeywell, H. A. Steinwender, Jr., Clinton Boogher, J. W. Bemis and Tarleton Brown, in the "St. Louis III." Three landings were made—at Carondelet Park, near Clayton, and then 5 m. north of Normandie Golf Club. Bemis and Von Phul are qualifying for pilot's license.

PITTSFIELD, Aug. 7.—William Van Sleet, Henry and Sheldon Whitehouse, in the "Mass.," to East Litchfield, Conn.

CANTON, Aug. 7.—Dr. H. W. Thompson, Walter Flickinger and Louis Sweningson, in the "Ohio," to 5 miles west of Millersburg. Dist., 36 miles.

CANTON, Aug. 7.—Dr. H. W. Thompson, Walter Flickinger and Louis Sivenlngson, in the "Ohio."

DAYTON, Aug. 7.—H. H. McGill and Earl Lines in the "Dayton," to Camden, O. Dist., 6 miles.

FITCHBURG, Aug. 7.—Chas. J. Glidden and Maj. Franklin Burnham in the "Boston," to Northboro Center. Dist., 35 miles.

ST. LOUIS, Aug. 10.—John Berry and Joseph Heine in the "Melba."

DAYTON, Aug. 10.—H. H. McGill, J. Schauer and Martha Schauer in the "Dayton," from Buck Island to Shakertown, O.

DAYTON, Aug. 11.—H. H. McGill and Michael Devanney, from Buck Island in the "Dayton" to 4 m. south of Lebanon, O., making intermediate landings near Bellbrook, Johnsville and Miamisburg. The balloon is being used captive at Buck Island.

FITCHBURG, Aug. 11.—Chas. J. Glidden, Prof. and Mrs. David Todd, in the "Boston" to Hopkinton, Mass., 30 miles; duration 1.30.

DAYTON, Aug. 12.—H. H. McGill and Henry Pruden, in the "Dayton," to Byron, O., after 5 hrs. trip.

RUTLAND, VT., Aug. 13.—Wm. Van Sleet, Ezra H. Allen and Edith I. Sawyer, in the "Pittsfield" to Brandon, Vt. Altitude 6,000 ft.

DOMINEE CHRISTENS BALLOON.

OAKLAND, Aug. 14.—P. A. Van Tassel and Prof. A. Vander Naillen, Jr., in the "Oakland" on its initial voyage. After services, begun with an invocation by Dr. Nelson E. Saunders, Mr. Naillen's daughter christened the balloon with a bottle of California champagne. The Mayor's representative wished the aeronauts good luck in the name of the city. The balloon has been constructed by Mr. Van Tassel for the Oakland Aero Club. In landing in a gale the basket capsized, and the aeronauts were thrown out and the two barometers broken. The duration was 4 hours.

PHILADELPHIA, Aug. 14.—Dr. Geo. H. Simmerman and Dr. Thos. E. Eldridge, Miss Lydia Cantor and W. W. Geller, both of the Baron de Hirsch School, in the "Phila. II" to Longwood, Pa. The balloon hit a tree just before landing finally. Alt. 8,200 ft., dur. 3 hrs.

DAYTON, Aug. 18.—H. H. McGill, Edward W. Keller and Edgar C. Ireland, from Buck Island, in the "Dayton."

HONEYWELL AND BERRY RACE.

ST. LOUIS, Aug. 19.—H. E. Honeywell, Sidney T. Bixby, Harry A. Blackwell and Carl H. Langenburg, in the "St. Louis III" (78,000 ft.) to Woodville, Ills., 34 miles, after 4 hrs. 45 min.

John Berry and Wm. C. Fox in the "Melba" (39,000 ft.) to Florissant, Mo., 17 miles.

PEORIA, Aug. 19.—Three balloons in race of Air Craft Club. See elsewhere in this issue.

FITCHBURG, Aug. 20.—Chas. J. Glidden (33rd ascension) and Harry C. Clayton, fifteen years of age, in the "Massachusetts," to Shirley, Mass. Gas was poor, and trip lasted only 23 minutes, landing at 6 p. m., covering 10 miles. Pigeons released at 4,000 ft. altitude arrived safely at their cotes, though all but one of the nine did not return till the following morning.

SPRINGFIELD, Sept. 2.—Capt. T. S. Baldwin, Mr. and Mrs. C. B. Harmon and Miss Anna Byrd, in the "Springfield," to Williamstown. Dur., 45 min.

HUDSON-FULTON CELEBRATION

(*Continued from page 153*)

A. Leo Stevens will use his balloon "You and I" as a captive during Hudson-Fulton. Located on the grounds of the Colonial Yacht Club, at 140th St. and the Hudson River, there will be a hydrogen gas plant for inflating the balloons. A wireless system will be installed for communicating news of the passage of the marine pageant and other events to the various stations in and around New York City. Wig-wag practice will be indulged in by the signal corps of the New York National Guard, also taking lessons in the operation and equipping of a captive balloon and the making of hydrogen. The signal corps already has an aeronautic squad which Mr. Stevens has taken in hand for instruction. Some time ago they had a drill in the armory in the handling, inflation, etc., of a balloon.

STATUS OF WRIGHT SUIT

(*Continued from page 9*)

planes or flexible rudders or arms for carrying same.

This cursory examination of the Wrights' patent and suit against the Aeronautic Society has not had for its object the determination of the validity of the Wright claims. It may be assumed, at least for the present and in the absence of fuller research, that the movement of the lateral margins of the main planes is controllable under the Wrights' patent. It may be assumed still further that said patent controls the flexible rudder and the movable arms before referred to, yet in the face of all of this assumption it is impossible to find under the most liberal interpretation of said claims the particular construction characterizing the Curtiss machine.

The use of supplemental surfaces appears to be indisputably a public right, and upon this apparently hinges the issues involved in the present suit. The bill, however, filed on behalf of the Wrights is not specific, and is a mere generalization of rights and grievances. If the suit is not abandoned, something more specific will undoubtedly be demanded, and at that time it will be possible to draw the lines of defense more definitely upon specific grounds.

For those interested in the issues involved, the United States patent of Chanute numbered 582,718, filed Dec. 7, 1895, dated May 18, 1897, will be interesting. Chanute here discloses wings comprising the main planes of his apparatus and being capable of movement to different positions above and below the normal plane, such movement being about an axis transverse to the line of flight, thereby presenting to the atmosphere different angles of incidence. Many varieties of mechanical means are disclosed in the art for changing the angles of incidence and Chanute's application seems indicative of practical work early in the art along the lines pursued by the Wrights. In view of the patent to Chanute, which was granted nine years prior to the patent to the Wrights, it would seem good law to interpret the claims of the Wrights strictly and specifically upon their construction as interpreted in their own phraseology. This would not reach out far enough to have any bearing upon supplementary surfaces.

It may also be interesting to note that in 1906 a French patent was issued numbered 362,201, disclosing supplemental surfaces as used in the Curtiss machine.

CLUB NEWS

(*Continued from page 47*)

society of this description should be at once formed in Canada, as the time is not far distant when we will see the 'car in the air' a commercial reality.

"It is therefore high time that Canada should not be lagging behind, but should put forward her best efforts to bring herself into line with all the great countries of the world.

"A general meeting will shortly be called, and we ask all those who have the smallest interest in Canada and things Canadian to send in their names, so that the secretary may communicate with them when arrangements have been made as to the time and place of this meeting."

Should you wish to become a member of this society or should you have friends or acquaintances whom you think would be likely to join the society, kindly send their names and addresses to M. B. Logan, Esq., secretary pro tem., 99 Gloucester St., Toronto.

The **Aero Club of America** has now affiliated with it the following clubs:

Aero Club of St. Louis, St. Louis, Mo.; Aero Club of New England, Boston, Mass., with balloons also stationed at Pittsfield and Fitchburg, Mass.; Aero Club of Ohio, Canton, Ohio; Aero Club of North Adams, North Adams, Mass.; Aero Club of Seattle, Seattle, Wash.; Aero Club of California, Los Angeles, Cal.; Aero Club of Indiana, Indianapolis, Ind.

The Club also has at the present time twenty-six licensed aeronautic pilots located at different points throughout the country so that members may make ascensions at almost any place at any time with capable pilots.

The victory of G. H. Curtiss at Rheims brings the competition for the International Aviation Championship to this country next year. Rules governing this competition will be drawn up at the meeting of the International Aeronautic Federation to be held at Zurich in October. The Aero Club of America will have eight votes at this meeting.

CONSTRUCTIONAL AIDS—V.

(Continued from page 129)

the joints welded, as well as the eyes for the guy wires.

Fig. 4 shows the socket joints of the Voisin machines. Designs 2, 3 and 4 are for rigid struts only.

A flexible arrangement is that of Fig. 7, in which part of the socket and nut is broken away to show the interior. No one has employed this, but it is given as a suggestion.

Fig. 5 illustrates a quick method of attaching ribs to the main beams. This system is used in the Raische machine at Morris Park. A tube is forced over the rectangular rib, flattened and screwed into the beam.

Fig. 6 shows a tightener for wires. The wire A is divided and each end fastened at B to right and left threaded steel screws C, which engage with the barrel nut D, through the center of which is drilled a hole for the insertion of a bar to turn the nut. The nut is locked by the wire E.

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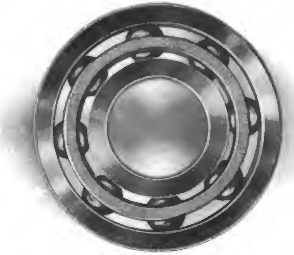

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AERONAUTICS

THE AMERICAN MAGAZINE
OF AERIAL LOCOMOTION

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NOVEMBER '09

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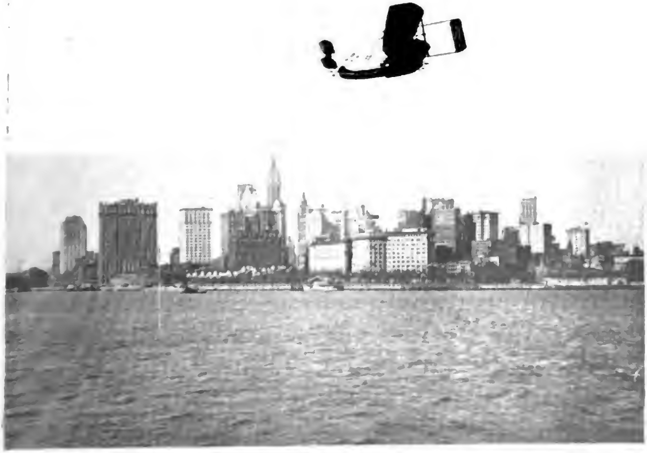

WRIGHT FLYING AT GOVERNOR'S ISLAND

Photo by Edwin Levick, N. Y.

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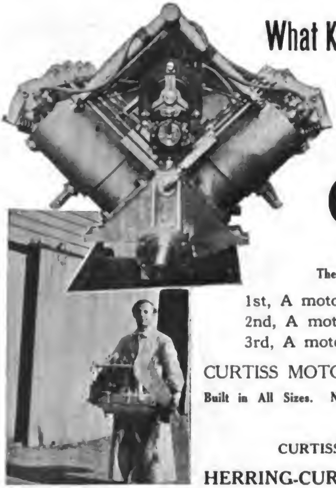

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FRENCHMEN BAD LOSERS

NOW that the Gordon-Bennett balloon cup has come back again to America, France has something more to rankle in her breast; and on top of Curtiss' victory, too.

The Bennett automobile race is now a thing of the past. Will the Bennett aero cups also pass into oblivion?

L'Automobile, a well-known French automobile journal, has the following to say on the subject of the Rheims races. It is regrettable that such an authoritative organ should speak so in view of its ignorance of matters here. That *L'Automobile* is not aware, evidently, that already four Curtiss machines have been put out, and that Curtiss schooled himself with the four machines of the Aerial Experiment Association while he was a member of that organization.

"It appears to us that French aviators have nothing to gain by taking part in this event, and that it is calculated, indeed, to do much evil to the French aeronautical industry. The reason is simple. There are at present not less than ten aeroplane constructors in France. What do we see abroad? Two Americans took part in the competition at Rheims and no other competitors existed anywhere. What is more extraordinary would have been to see Farman fly for England, for he is of English nationality, while at the same time being essentially Parisian. In any case he is a member of the French school, and in that respect as much French as Bleriot or Levasseur. Suppose Farman had won the Gordon-Bennett cup; every foreigner would have declared that the English aeronautical industry was at the head of the world and that the French product was inferior.

"America is the only country that can meet us in aeronautical matters. The Wrights have presented series of machines which class them among the best constructors. As to Curtiss, the winner of the cup, he has only one machine of this type. In France there are various constructors, among them Bleriot, Antoinette, Farman and Voisin, who are daily selling machines to the public. Elsewhere only the Wrights are in this position.

"Under these conditions we are playing the role of dupes in taking part in a competition in which equal importance is given to the industry of various nations. We are about to repeat in the aviation world what was done in the automobile world, where France played into the hands of the Germans, English and Italian industry, by putting on the same footing the fifty French factories and the rare foreign factories.

"The cup has been gained by a compatriot of the generous donator. It has gone to America. Let it stay there forever. It is to be hoped that our constructors will see the danger at once, and that they will inform the Aero Club that they have no further desire to take part in such an event."

The Automobile, of New York, remarked: "Had Bleriot, who placed such importance on the winning of the cup, been successful in his attempt, it is certain that such a wail would never have gone forth. This causes the whole affair to look very unsportsmanlike, because the French are losing."

HORSEPOWER AND FLYING

THE tendency towards great horsepower in proportion to weight in aeroplanes is regrettable. It does not make for advancement in the efficiency of the machine itself. Given enough power, almost anything would fly. But the line of work should be for evolving the nearest approach to soaring.

Professor Langley said, in concluding his paper on "The Internal Work of the Wind:"

"The final application of these principles to the art of aerodromics seems, then, to be that while it is not likely that the perfected aerodrome will ever be able to dispense altogether with the ability to rely at intervals on some internal source of power, it will not be indispensable that this aerodrome of the future shall, in order to go any distance—even to circumnavigate the globe without alighting—need to carry a weight of fuel which would enable it to perform this journey under conditions analogous to those of a steamship, but that the fuel and weight need only be such as to enable it to take care of itself in exceptional moments of calm."

In the April number of AERONAUTICS, Mr. Chanute discussed fully the problem of soaring and showed its possibility and the requisites for its performance.

It has not been brought out with sufficient emphasis the small amount of power needed to fly with a suitably built aeroplane. The Wright Brothers have come the nearest to doing away with motive power, but the importance of this phase of the subject has caused little comment and apparently small credit has been allowed these pioneers for attaining what they have. In Europe the sole aim of experimentors and practical men has been to outstrip the Wrights in speed and duration performances, laying aside the question of perfecting the machine.

M. B. Sellers, in Kentucky, has been able to fly short distances repeatedly, with but seven rated horsepower.

This is another step in the right direction.

Advancement along this line must be credited to America.

THE POWER BEHIND THE MACHINE

IT IS of prime interest to the aviator to know exactly on how much actual horsepower he can count in time of need. Purchasers of engines have to depend solely on the claims of the manufacturer as to horsepower, and it is not to be expected that motors will be underrated at all.

The need for a definite statement of horsepower has been realized by the Automobile Club of France, and last spring a competition was held in which but two motors showed up for the test, one of which was the Gnome, which has been heralded by some as the best motor in Europe.

Though rated at 50 horsepower, it only developed 34.2 horsepower average for 15 minutes, the remainder of its run of 2 hours 17 minutes being performed with broken inlet valve springs, popping in the carburetor, etc. The above horsepower was given at 1,177 revolutions per minute. As the motor weighed 180 pounds, its specific weight per horsepower works out at 6.47 pounds.

During December another series of tests will be held by the Automobile Club of France, for which some small cash prizes have been offered.

AUTOMOBILE CLUB TO OFFER PRIZE.

We are glad to understand that the suggestion to the technical committee of the Automobile Club of America by AERONAUTICS that a motor competition, or series of tests, be held to determine the best motor suitable for aeronautics, is to be adopted, and that a substantial prize will be offered by the club.

An electric cradle dynamometer is now being installed, and will shortly be in a position to test any motor up to 50 horsepower.

THE WRIGHT-CURTISS SUIT*

THE patent specifications are drawn to cover both monoplanes and machines with two or more parallel superposed surfaces. Claims given in the patent include both types. The following statement is made as concise as possible consistent with the endeavor to be accurate.

MAIN POINTS IN WRIGHT PATENT IN QUESTION IN THE SUIT.

1. In a flying machine a normally flat aeroplane having lateral marginal portions capable of movement to different positions above or below the normal plane of the body of the aeroplane, such movement being about an axis transverse to the line of flight, whereby said lateral marginal portions may be moved to different angles relatively to the normal plane of the body of the aeroplane, so as to present to the atmosphere different angles of incidence, and means for so moving said lateral marginal portions, substantially as described.
2. Application of vertical struts near the ends having flexible joints.
3. Means for simultaneously imparting such movement to said lateral portions to different angles relatively to each other.
4. Refers to the movement of the lateral portions on the same side to the same angle.
7. Means for simultaneously moving vertical rudder so as to present to the wind that side thereof nearest the side of the aeroplane having the smallest angle of incidence.

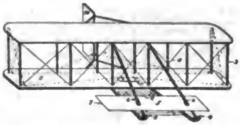
There appear to be two main points of argument in the Wright-Curtiss suit. One is whether or not auxiliary planes, such as used, for instance, by Curtiss, infringe the Wright patent covering "warping" or twisting the main planes themselves. The other is whether or not it is necessary to use the rear rudder *in conjunction* with either warping the main planes or using the wing tips.

By the fact of bringing suit, Wright evidently contends that Curtiss employs means for operating the wing tips in conjunction with the rear rudder. The drawing in the Wright patent shows that the rudder must move in conjunction with the warping. In the machines in use it seems that the rudder can be moved independently of any warping, and vice versa, though both operations can be made simultaneously if desired, with the same mechanism, by merely moving a lever in certain directions.

An examination of the Curtiss machine shows that separate mechanism is employed for tilting the wing tips from that used for turning the rudder. It is a fact, however, that both operations can be made at the same time but only by simultaneous action on the part of the aviator.

The Wrights evidently regard it necessary that warping the planes themselves, or operating "wing tips," so called, be in conjunction with a movement of the rudder. Curtiss will, no doubt, claim that he can turn circles by means of the rudder alone.

The Wright system of warping the planes, as now in use, is shown by Fig. 1 and is described below. Fig. 7 shows the mechanism by which the aviator brings about the warping and the rudder action. In Fig. 1 the machine would turn to the right were it not for the turning of the rudder to the left (Fig. 2) to counteract the effect of the warping. Fig. 3 is a longitudinal section showing the left sides of the planes tilted up and the right sides turned down, from which it is seen that the angle of incidence is greater on the right than on the left. There is greater projected area on the right than on the left.



The Warping System as Shown in the Patent

In Fig. 4 is illustrated the same view of the Curtiss machine, with the left wing-tip tilted up and the right one down. Both tilt at the same angle of incidence, both have the same projected area, but the direction of the wind is presumed to tend to force the left side of the machine down and the right side up. In Fig. 6 it is attempted to show the movements of the Curtiss wing tips as compared with the plane-warping illustrated in Fig. 1. The cables (a) (b) (c) are attached to the rear edge of the wing tips, as shown. Moving the shoulder brace (d) by swaying the body to the left pulls on (a), which draws the right wing tip down. The pull is communicated all the way around the machine, as shown by the arrows. The rudder is worked left or right by turning a steering wheel. There is no connection between the two systems on the Curtiss machine.

Fig. 5 shows the Wright front rudder and the other small diagrams give various views of the Wright machine.

HOW WRIGHT TURNS.

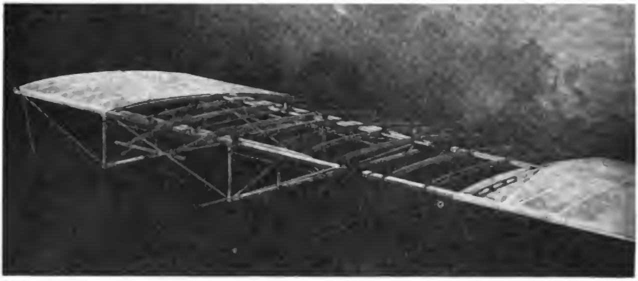
Mr. Wright has explained his turning circles as follows: Suppose one desired to turn to the left. To turn merely by the use of the rear rudder would result in the machine's "skidding" greatly to the right. In the turn, the left side of the machine would naturally slow up somewhat, and the right side would move forward at greater speed than the left. Headway would be lost, and it is stated that at this point the right side of the machine would be apt to slide down toward the earth. To make a short turn to the left without loss of headway, the practice is to warp the right side down and the left side up with the rudder turned toward the left. But in making this left turn it is necessary that the machine be "heeled" over to the left so that the machine will not skid. After the turn the planes are straightened out and the rudder brought back in place or moved somewhat to the right to keep in the desired path.

---

*Refer also to two recent English patents described and illustrated in the April and July issues. These will be found of interest. Also the "Status of the Wrights' Suit," by Thomas A. Hill, in the October number.

It is possible, of course, to make turns of great radius without the use of warping, and possibly Mr. Curtiss will claim this point to offset the contention on the part of the Wrights that it is obligatory to use the rudder in conjunction.

Referring to the Wright patent again, without the use of the rudder in conjunction with the warping, the machine would turn on a vertical axis like a corkscrew, and so the rudder is operated simultaneously to correct this tendency. Of course, the movement of the rudder to the one side or the other increases forward resistance, and this may account for the lack of extreme speed commented upon by foreign writers. In this connection it must be remembered that in the Rheims meet the Wright machines were operated by men who had less experience as aviators than men like Bleriot, Latham and Farman, with whom they were compelled to compete.



Construction of Wright Planes

Orville Wright averaged in a ten mile flight, with and against the wind, a speed of 42.58 miles per hour, while the speed with the wind was 47.43 miles per hour.

Description of Wright Aeroplane.

POWER PLANT.

The motor is designed by the Wright Brothers themselves, has four cylinders, 4⅜ by 4 inches, bore and stroke. The ignition is the make and break system, with Bosch gear driven magneto. The total weight of the motor is 200 lbs. and the power is given as 25. Mr. Wright has stated that in flying but 15 h. p. is actually used. The gasoline is fed by a Pulsometer pump to a jet placed inside a mixing tube, which is connected to the cylinders by means of a manifold. The cylinders are separate, surrounded by copper water jackets. A cam shaft within the crank case operates overhead valves by means of rocker arms.

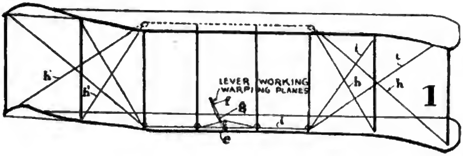
At one side of the motor is the radiator, consisting of flat brass tubes, 5 ft. high by 4 in. wide. Each cylinder has a small auxiliary port just below the head. Two pumps actuated by a cross-shaft from the two-to-one cam shaft are provided for forcing the gasoline into the mixing tube, and for forcing oil from a reservoir in the base of the engine to the different bearings and the cylinders, after which it is returned to the tank. The oil pump is gear driven, and the gasoline pump is a Pulsometer. The gasoline supply is contained in a large tank fastened to the struts and on the right of the operator, between him and the motor. The radiator is attached to the front strut on the far side of the engine from the aviator. The centrifugal motor pump is directly connected to the front end of the engine shaft.

TRANSMISSION.

On the rear end of the engine shaft are two gears, each one connecting by chains a wooden propeller, of which there are two, 8.52 ft. diameter, pitch 9.8 ft., mounted on parallel shafts 11 ft. 6 in. apart; to drive in opposite directions, one chain is crossed. The gearing of the propeller to the engine is in the ratio of 32 to 10. Both chains are inclosed in tubes. The speed of the propellers is 400 to the engine's 1300.

SURFACES.

The spread of the two main planes is 41 ft. by 6.56 ft., front to rear, a total of 538 sq. ft. for the two. The extremities are rounded off. There are 34 ribs, curved 1-20 in each surface. The machines now being made use an English waterproof cloth for the planes. There are 10 vertical struts separating the two great surfaces, a distance of 5.9 ft. The angle of inci-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LEVER WORKING WARPING PLANES
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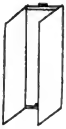

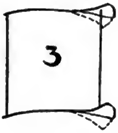

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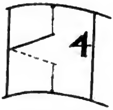

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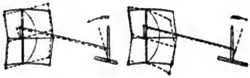
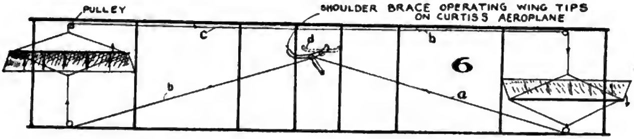
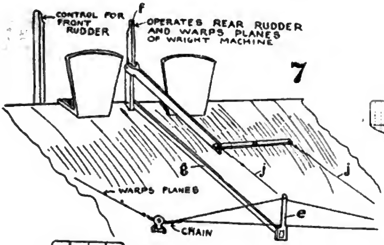
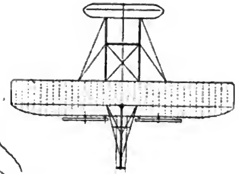


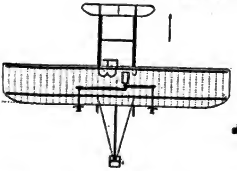

PULLEY
SHOULDER BRACE OPERATING WING TIPS ON CURTISS AEROPLANE
c
b
d
b
a

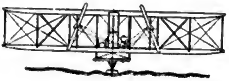
6

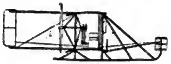

CONTROL FOR FRONT RUDDER
f
OPERATES REAR RUDDER AND WARPS PLANES OF WRIGHT MACHINE
g
j
j
WARPS PLANES
e
CHAIN

7









dence is stated variously, from 3 deg. up to 7 deg. Wright is said to have given it himself as 3 deg.

RUDDERS.

The double surface front rudder, horizontal, used for steering up and down, is 14.76 ft. by 2.46 ft. deep. The rear edge is 11.48 ft. from the front edge of the main planes. This rudder is capable of being curved so as to prevent a concave surface to the wind, as illustrated in the diagram. (See January number.) This is tilted up and down by moving a lever at the left hand backward or forward respectively. This curving front rudder, now being used on all the machines being built by the Wrights, has caused little comment. This rudder is normally uncurved and horizontal, but curves simultaneously with the motion backward or forward of the lever. Curved, the rudder gives more power than if flat, and goes through the air easier. Then, too, the center of pressure moves about less than if it were flat or had a fixed curve.

For steering left or right, and in conjunction with the warping of the planes, there is a double surface vertical rudder, each surface being 1.97 ft. deep by 5.9 ft. high. The front edge of this is 8.2 ft. from the rear edge of the main surfaces. To steer to the left the lever at the right hand of the operator ("f" in Fig. 7) is moved forward; to steer to the right the reverse is done. The wires (jj) run back to the rudder from the cross bar.

The total length over all is 30.67 ft.

STABILITY.

To obtain lateral stability, the extremities of the wings are warped, by moving the lever at the right hand of the operator to the left or right. To warp these extremities, the following system is employed: Wires are attached to the upper ends of each of the two outside rear struts at each extremity of the wings. These join at a pulley at the lower end of the third rear strut from each extremity of the lower surface and run to a lever (e). Another set of wires (hh) and (h^1h^1), is attached to the lower ends of each of the first mentioned struts and run over pulleys at the top of each of the third struts from each extremity of the upper surface. (See Fig. 1.)

Moving the hand lever (f) to the left communicates through the rod (g) a movement to the left of the upright lever (e). This pulls on the wire (i), branching off to the top of the two outer rear struts, and brings the right hand rear edge of the upper surface down, pushing lower surface down also. This makes a strain on the wires (hh), joining at the top of the third rear strut, and creates a pull upward through the extension (h^1h^1) of these last mentioned wires on the rear edge of the lower left hand. By this operation the left hand wing is warped upward.

There is an increase in the angle of incident on the right hand side of the machine, and a decrease on the left hand side, with an attendant greater lift on the right than on the left, and also a resulting tendency for the right hand side to slow up. To keep the straight course, then, the rear vertical rudder is simultaneously moved toward the left, the side of the less resistance in order to bring the head of the machine around in its intended path. Both operations are done at the same time by the same lever. To warp the wings in the opposite direction the lever (f) is moved to the right.

As illustrated in the accompanying drawing, moving the lever (f) to the left or right warps the planes while moving it forward or backward moves the rudder. This twisting mechanism in the Wright machine, and the wing tip system in the Curtiss aeroplane, are employed to counteract the effect of wind gusts and to correct any undesirable lateral slant of the machine.

WEIGHT.

With the weight of the Wright apparatus at 1,100 lbs., mounted by one man, and the surface as 538 sq. ft., the weight lifted per square foot is 2.02 lbs., and a weight of 38 lbs. to the h. p., using 14 h. p. used as a divisor.

RUNNING GEAR.

The whole apparatus is mounted on two long wooden runners, which permit the machine to slide along the ground as soon as it alights. This serves to check forward motion. In starting, a little car is placed under the middle of the chassis. The grooved wheels of the car run over a monorail. After obtaining proper momentum the machine rises from the car. In most of the flights a falling weight was employed to give initial velocity. When this was used, a rope with a ring at the end was attached to a downward pointing hook in the forward part of the aeroplane. This rope then ran over a pulley at the end of the rail and back to the tower and to the falling weight. In the flights made in New York the propellers easily gave enough velocity to permit the use of the rail alone.

Wrights Get Injunction.

Buffalo, Sept. 30.—An order was issued by Judge Hazel in the United States Court here to-day against Glenn H. Curtiss and the Herring-Curtiss Co. of Hammondsport, requiring them to show on or before October 14 why a preliminary injunction should not be granted restraining them from making, using or sailing, the so-called Curtiss aeroplane.

Kipling to Date.

A chap there was, and he made his prayer,
    Even as you and I,
That he could fly through the ambient air,
    Even as you and I.
So he went right up in his silken ship,
But the blamed old engine chanced to slip,
And he said, "Oh, dear, such a mussed-up trip!"
    Even as you and I.

CONSTRUCTIONAL AIDS NO. 6

THE aeroplane or airship builder has a universal panacea in Bowden wire for the transmission of motion through a flexible and tortuous route. He can open or close his throttle around a strut or in an otherwise inaccessible place. It can be applied to the spark lever, the air valve of his carburetor or to "tickle" the latter nuisance.

WHAT IT IS.

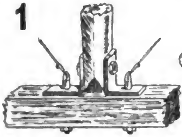
Bowden wire mechanism consists of but two parts—a closely coiled and practically incompressible spiral wire, constituting what is termed "the outer member," and a wire cable, practically inextensible, threaded through the above, and termed "the inner member."

Previous to the introduction of the Bowden mechanism the usual mechanical method of transmitting power in other than a straight line was by means of angle levers and rods, cables and pulleys, and other such devices, all of which necessarily involve considerable complication, besides increased labor and expense in adapting them satisfactorily to the users' requirements. Bowden wire dispenses with all these difficulties, while enabling power to be transmitted by the most tortuous route. The mechanism is complete in itself, and requires only that one member shall be anchored to a stop at each end, and that the other member shall be attached to an operating lever at one end and to the object to be moved at the other. It may be adapted to impart either a pulling or pushing movement.

CASTOR OIL LUBRICATES WELL.

Castor oil is very extensively employed for lubricating the aeroplane motors. Bleriot uses it exclusively for both his small and large motors. All the Gnome engines use it for the main bearings. Employers of pure castor oil are unanimously of opinion that it is excellent as a lubricant. The only objection that can be raised against it appears to be that its smell is objectionable.

FITTINGS OF THE AEROPLANE.

1


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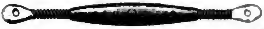

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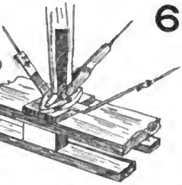

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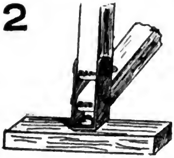

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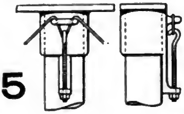

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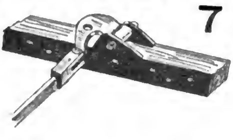


In Fig. 5 is shown a combined strut-socket and wire-strainer. Among the advantages claimed for this device are the following: Extreme lightness, since it takes the part of two turnbuckles and does away with (in some cases) five metal eyes or hooks. It offers no head resistance, being immediately behind the strut and socket; also it can be quickly and easily attached to piano wire. In addition, it is very cheap, and there are no left-hand threads, which are often difficult to replace in case of loss. F. G. Brockway, in England, has put out this device, protecting it with a patent.

To the English *Flight* we are indebted for the original of the sketches 1, 2, 6 and 7. Fig. 1 shows the joint used by Pischoff. That in Fig. 7 is the R. E. P., in France. Fig. 2 shows a Lamplough fastening. Short Brothers, the well-known balloon builders, turned aeroplane manufacturers, employ the flexible scheme shown in Fig. 6.

Figs. 3 and 4 illustrate two fittings sold in the open market by Chauviere.

WRIGHTS' PROPELLER EFFICIENCY

ATTENTION has occasionally been called to the unquestioned efficiency of the Wright aeroplane. It is of interest to examine the reasons for this efficiency, and in comparing the performance of various aeroplanes, we should remember that not only the weight carried per horsepower, but also the speed attained, must be considered.

The greater efficiency of the Wright machine appears to be due to the use of two large propellers turning at slow speed, as distinguished from the small direct connected high speed propellers of most other machines. The absence of large fins and other guiding and steering surfaces may also attribute to efficiency by reducing skin friction and head resistance. As has been shown by recent experiments, the comparatively slight curve of 1 in 20 used on the Wright machine gives a greater ratio of lift and drift, than the deeper curves employed by Bleriot and some others. Aside from the efficiency, it would seem that the quick and vigorous response to "control" of their machine would recommend it; but for this very reason the natural or structural stability may be less.

In view of the fact that there are no reliable propeller data in existence, and that probably 40 to 50 per cent. is the best that is obtained by directly connected propellers already in use, the following is of the greatest interest:

75 PER CENT. EFFICIENCY.

Wilbur Wright has said that the efficiency of his propellers is 75 per cent., and naively admits that even that is not as good as it should be. And this, absorbing but 14 h.p., with the balance in reserve. And it must be remembered that the chain drive imposes a tax of at least 5 per cent. or so for loss in transmission. There are so many qualifications of the term "efficiency" as applied to propellers that we must accept herein the general understanding thereof.

It is stated that the efficiency of a propeller increases with the decrease in the product of the pitch and the r.p.m., but the smaller this product the more power is required for a certain diameter of propeller.

The design of an aeroplane has all to do with the efficiency of the propeller. If large, slow speed propellers are used; room must be found for them.

In the foreign dirigibles, where more than 100 h.p. is used to drive the great gas bags, large propellers cannot conveniently be used on account of constructional difficulties, so that the smaller propellers used must rotate at high speed, with a consequent loss in efficiency. Nor does a monoplane lend itself well to large propellers not directly connected.

The mystery of the Wright propeller seems to have been solved for the public by an engineer in the Royal Prussian Aerial Battalion, Captain Eberhardt, of Berlin. He has published details of the propeller, with equations and drawings made from measurements taken.

FIGURES ON WRIGHT PROPELLER.

Fig. 1 shows a top and plan view of the solid wood propeller, with an outside radius of 1.3 meter (4.264 ft.). The hub radius is as small as possible consistent with strength in order to get all the blade surface capable of being had, so that the surface is almost perpendicular to the direction of rotation.

Captain Eberhardt goes on to say, referring to this last statement:

"This, as I have frequently pointed out, is quite important. The height of the propeller through the hub is 130 millimeters (see Fig. 1). Wright has cut off the ends of his propeller as shown in the heavily shaded portion. This gives it rather a queer appearance, but one might be tempted to see in it a good aerodynamic reason. Perhaps the ends of the propeller were cut off to allow the motor to run at full speed? It is not impossible that by this cutting off of the ends and keeping a constant height (thickness) of the propeller that there might be a certain advantage. Theoretically, the form of the propeller is indifferent, as I have shown in my book, 'Theorie der Luftschrauben.'

How the thing is in practice can only be found out by experiment. To judge from present experience the shape seems to have very little to do with the subject. Figs. 2, 3 and 4 show sections through the propellers in three different places. If x is the distance from the center of the hub, and Alpha the angle of slope at that distance, then the pitch s is found by the equation $s = 2 x \pi \tan \alpha$

The pitch angle, propeller width and propeller curvature are shown in Figs. 2, 3 and 4. In Fig. 2, $x = 1.3$ meter; in Fig. 3, $x = 0.86$; and in Fig. 4, $x = 0.5$.

These values inserted in the above equation give the pitch of the propeller as follows:

For Fig. 2, $s = 2 \times 1.3 \pi \tan 20° = 2.98$, or approximately 3.

For Fig. 3, $s = 2 \times 0.86 \pi \tan 29° 50' = 3.09$, or approximately 3.

For Fig. 4, $s = 2 \times 0.5 \pi \tan 44° 20' = 3.06$, or approximately 3.

By this it is seen that the pitch is practically a constant of three meters.

The Wright motor should develop 28 h.p. at 1,300 r.p.m., so that each propeller absorbs 14 h.p. I have measured the ratio between the motors and propellers by counting the teeth in the sprockets and found $32 \div 10 = 3.2$, so that the r.p.m. of the propellers is $1300 \div 3.2 =$ approx. 400.

The tractive effort (thrust) of the Wright propeller is found by equation, which I have worked out as follows:

$$N_i = \frac{S}{75} \times \frac{sn}{60}$$

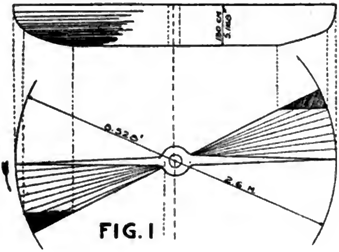


FIG. 1

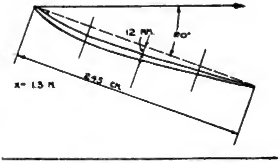


FIG. 2

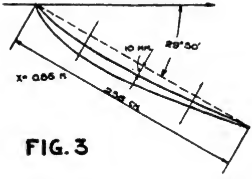


FIG. 3

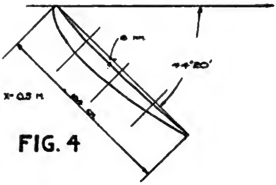


FIG. 4

The Wright Propeller

in which N_i means work absorbed (total work), S the tractive effort (thrust), n the r. p. m.; s the pitch of the propeller.

By inserting these values we have:

$$14 = \frac{S}{75} \times \frac{3 \times 400}{60}$$

which gives the thrust of the propeller S=50 kilograms, approximately.

The resistance of the Wright aeroplane amounts to 100 kg. for a speed of 15 to 16 meters per second. The pulling power of the propeller per horsepower is 50÷14 equals about 3.6; in reality a little bit more, as I have put the figures in round numbers. As we put the speed c of the Wright machine at 15 to 16 meters per second, the efficiency, E, of the propellers is found by equation:

$$E = \frac{N_e}{N_i} = \frac{S_c}{75\,N_i}$$

(N_e being the useful work.)

Substituting values for S, c and N in the above, we have:

$$E = \frac{50}{75} \times \frac{15}{14} \text{ equals about } 0.71.$$

$$E = \frac{50}{75} \times \frac{16}{14} \text{ equals about } 0.76.$$

As the Wright machine makes nearer 16 than 15 meters per second, the efficiency might be said to be 76 per cent."

Captain Eberhardt claims that efficiency is increased with the number of propellers, and that for large flying machines with four propellers an efficiency of 85 to 88 per cent. ought not to be too high. This is the theory of W. R. Kimball in his 20-bladed propeller.

To our Friends:

If you know of someone interested, won't you tell us of him?
If you meet another enthusiast, won't you tell him of us?

"One good turn deserves another"

You Know!

RAICHE MAKES FIRST FLIGHT.

Riggs Airship Being Inflated.

THE first member of the Aeronautic Society to have fly an aeroplane designed by himself is Francois Raiche, whose machine was described in a recent issue of AERONAUTICS. During September the motor was got running, and, although the wing tips for stability were not hooked up, on September 16 Raiche and Crout, who designed the motor, were so anxious to get the machine in the air that they could not wait for a little thing like that. Hardly any preliminary run was necessary. Starting with the rudder tilted up, the aeroplane, with Charles Crout aboard, got into the air in less than a hundred feet and traveled for about the same distance late in the afternoon. The machine was then packed up for exhibition at the Madison Square Garden show. It will go on the road shortly, giving exhibitions, with Harry M. Green as the Star.

S. Y. Beach has continued the trials of his monoplane as a "wind wagon" around the Morris Park track. Everyone is waiting patiently for him to put on the planes again and make a real try.

The Riggs — Rice airship is being inflated for its trial. The bag, which has been built by Leo Stevens, is a hundred feet long, was made under a contract to lift a certain specified weight. The framework is made of tubing, with Silverite connections. This framework extends the full length of the bag and actually incloses the bag, which would thus be of the rigid type, like the Zeppelin, but with the framing outside instead of inside the bag. One large propeller is directly connected at the forward end, and back from the forward end on each side is a smaller propeller. All the propellers are capable of being tilted for use in ascending or descending in place of using rudders.

Frederick Shneider has not put his second Wright-like machine together, but has been making scale models for sale.

The Brauner-Smith aeroplane is now at Morris Park, and, with one or two others, is waiting for a motor. There are no suitable motors to be had for prompt delivery, it is claimed.

This winter will probably be the last for the Aeronautic Society at these grounds, as the surrounding land is being laid out in streets and soon the big grand stand, which has been sold, will be demolished. The new grounds will probably be on the Hempstead Plains, near Mineola, as this is the only suitable large space near New York. The thousands of acres of marsh land in Jersey have been investigated, but found too wet for any use.

Dr. H. W. Walden has been running his double biplane on the track, but has not succeeded in getting up enough speed to leave the ground.

GORDON BENNETT BALLOON RACE

AGAIN the Gordon Bennett balloon cup comes to America, for the second time. From Zurich, October 3rd, seventeen balloons started in this, the fourth contest for the cup. Among the pilots were Alfred Le Blanc, Capt. von Abercron, and Paul Meckel, who were also contestants in the race from St. Louis in 1907.

E. W. Mix, a native of Ohio, represented America in the balloon "America II," used by J. C. McCoy in last year's race. Mr. Mix made the greatest distance, about 1,100 kilometers, landing north of Warsaw in Russian Poland. Alfred Le Blanc was second with 834 kilometers. Cable advices are not certain whether Mr. Mix is to be granted the cup, as a statement has been given out that he made a descent at one point and took on ballast. This will be investigated, of course. In the next issue we will give a summary of the race with the official figures.

While the feeling of the French in regard to the Bennett aviation cup is unsportsmanlike, still we cannot say they have no valid reason for feeling disappointed at being placed second to America in the balloon race. Mr. Mix was aide to Alfred Le Blanc in 1907 when they both represented France in the St. Louis race. Now Mr. Mix represents America in the Zurich meet, and with a French made balloon. Mr. Mix has lived in France the best part of his life, so that France really looks upon him as an adopted son. It might have looked better for America to have sent a resident native with an American balloon. Of course, the obtaining of Mr. Mix to represent America was a sagacious move which resulted in victory.

Army News

WASHINGTON, Oct. 12.—Wilbur Wright arrived in Washington on the evening of October 5, and the next day commenced preparations for the instruction of signal officers, as required by his contract. The Wright aeroplane and the Signal Corps detachment were moved from Fort Myer, Virginia, to College Park, Maryland, on the 6th.

First Lieutenant F. P. Lahm, Signal Corps, and Second Lieutenant F. E. Humphreys, Corps of Engineers, are the officers selected for instruction.

On October 8 for the first time, an aeroplane owned by Uncle Sam made a flight, for on this day Wilbur Wright, who had never flown this machine before, started in to give driving lessons in "Miss Columbia," as the machine has been called.

Three short flights were made of about five minutes each, then Lieut. Lahm took his place beside Mr. Wright for five minutes, then Lieut. Humphreys got in for a lesson.

The next day Wright alone made a speed trial over a closed circuit of one kilometer. In one direction the time for the 500 meters was 24 1/5 sec.; in the other, 24 3/5 sec. At the fastest direction, the m.p.h. figures 46.14, slightly less than Orville did in his official flight.

Two other solo flights were made, one without the use of the falling weight. Duplicate levers for the use of the students of the Wright "Aviation College" were fitted and a couple of flights made with Lieut. Lahm.

Sunday, the 10th, was a day of rest for Mr. Wright. On the 11th a short solo flight was made, in which the machine was driven in short-radius circles. The instructor and his pupil, Lieut. Humphreys, made a flight of over seven minutes on the 12th.

AEROPLANE RECORDS.

Distance Record.

Farman, Aug. 27, 1909, Rheims... 180 kiloms.

Duration Record.

Farman, Aug. 27, 1909, Rheims .... 3h. 4m. 56 2/5s.

Duration With Passenger.

O. Wright, Sept. 18, 1909... 1h. 35m. 47s.

Height Record.

Rougier, Oct. 2, 1909, Berlin........	560 ft.
Unofficial, O. Wright, Oct. 2, 1909, Potsdam	1,600 ft.

Speed Records.

Kiloms.		h.	m.	s
10	Bleriot	0	7	47 4/5
20	Curtiss	0	15	50 3/5
30	Curtiss	0	23	29 1/5
40	Latham	0	34	55
50	Latham	0	43	56
60	Latham	0	52	44 2/5
70	Latham	1	3	6
80	Latham	1	11	26 3/5
90	Latham	1	19	56 2/5
100	Latham	1	28	17
150	Latham	2	13	9 3/5

Two-Man Speed Record.

10 kiloms. Farman .... 9m. 52 4/5s.

Three-Man Speed Record.

10 kiloms. Farman .... 10m. 39s.

Quick Starting.

Delagrange, Sept. 29, 49 meters.

Fastest Average Speed.

Bleriot, Aug. 28, 1909, Rheims, 76.95 k.p.h. (47.78 miles). Unverified, Santos Dumont covered 8 km. in 5 min., a speed of 96 k.p.h. (59.61 miles). The distance is also stated as 7.5 km. and the time 6 min.

WRIGHT AND CURTISS FLY IN HUDSON-FULTON CELEBRATION

WRIGHT OUT-BLERIOTS BLERIOT—BURSTING OF ENGINE ENDS FLIGHTS—AIRSHIPS START! FOR ALBANY—BALDWIN HAS ACCIDENT

STEVENS' CAPTIVE BALLOON SUCCESS.

THE most spectacular feat in aviation up until October 4, of the year of our Lord 1909, was probably Bleriot's crossing of the English Channel in his little monoplane. This has suffered severely by comparison with the sensational flight of Wilbur Wright on this day from Governor's Island, off the southern end of Manhattan Island, out past the statue of Liberty, up the Hudson to a turn over the British warship "Drake," opposite Grant's Tomb, and back to the Island. No early morning gallop was this, with a great expanse of clear water in case of mishap, but a stake event over the congested traffic of the great harbor and river, the trans-Hudson ferryboats and the long line of foreign battleships.

And this was only a try-out for the official flight to be made in the afternoon. What Wright really intended to do is still a matter of conjecture. A condition of his understanding with the Hudson-Fulton Commission was that he remain in the air an hour. At least we knew he would go up the Hudson again.

The morning flight almost caught the newspapers napping, and it did the photographic brigade. But by two o'clock there was no lack of the camera gents all along Riverside Drive, and at the historic Claremont restaurant there was a regular encampment. At this hour the announcement was made that the flight would shortly start. It was not until two hours later that the patient men received word that the head of one cylinder had blown off and that no further flights would be made. It was truly a sad procession that made for the subway, for the last chance to get photographic record of the machine in flight had passed, and the week had not been anything like prolific in affording opportunities.

At the Governor's Island end of the course something serious had happened. The aeroplane was on the rail and the propellers were being turned to "crank" the engine. There was just one solitary explosion and a piece of something shot up through the plane, describing an arc to the rear where it fell in the sand. It was the cylinder head. A "flareback" had occurred.

Wright immediately threw up his hands with a faint guess-this-is-the-end-of-it kind of a smile and took the next boat to Manhattan, and was in Washington the following day to begin the instruction of the Signal Corps men.

The distance of the morning flight totals over 20 miles and the elapsed time was officially taken as 33 minutes, 33 seconds. The Weather Bureau measured the speed of the wind as eight miles. The average speed made was just under 36 miles an hour. Mr. Wright's estimate was about 41 miles, with the wind blowing eleven.

WRIGHT CIRCLES STATUE OF LIBERTY.

Mr. Wright had been at the Island since the 20th of September and Curtiss arrived with his machine a week later. High winds prevailed practically all the time up to September 29, when they let up to allow the airships to get away and Wright to make an inspiring circle of Miss Liberty.

About nine in the morning his first flight in New York was made, circling around the great level expanse of filled-in land comprising the southern portion of the Island. This lasted about 5½ minutes.

An hour later saw a goodly crowd of spectators when Wright started on his swoop around Bedloe's Island. He was 6½ minutes in the air. This feat might well be compared to a duplication of Santos Dumont's famous airship trip around the Eiffel Tower in Paris, with great steamships and a myriad of smaller craft in place of buildings. Toward evening another flight of about 3 minutes around the Island was made in a fitful wind.

No more flights were made by him till the Great One of October 4, as abnormally high winds prevailed. Nature allotted but these two favorable days for the aero part of the celebration, and advantage was quickly taken of the opportunities.

The machine Wright used was made up of parts, both new and old, the major portion being from the machine used by Orville Wright at Fort Myer last year in the fatal flight. The motor was the one used in the last flights in North Carolina. Under the center of the lower plane and extending nearly to the rudder in front was a canoe, in anticipation of a landing in the wet. This Wright bought up street one day before the flights. It was then decked over with canvas.

CURTISS' FLIGHTS.

The Curtiss machine did not arrive until the 27th, but it was set up in record time. In two hours there was enough of the machine together for it to appear complete to the average New Yorker.

Early in the morning of the 29th, Curtiss made one short flight as a test of the machine, which was a "bran' new" one, finished at Hammondsport during his absence in Europe. Few were present at the unearthly hour of 6 a. m. to view it. The next flight was not until the night of October 3, when a short one was made lasting not more than a minute.

No other flights were made. On the afternoon of the Wright-Hudson flight the Curtiss machine left for St. Louis, to take part in the meet there.

THE AIRSHIP RACE.

The airship feature of the celebration was not as satisfactory as it might have been. Although three airships actually showed up, but two made a start for the "World's" $10,000 prize for a flight to Albany from the "Fulton Flight Square" at Riverside Drive and 120th Street.

Capt. Thos. S. Baldwin built for Geo. L. Tomlinson a new dirigible, practically a duplicate of his own. The air-cooled Curtiss motor formerly used by Capt. Baldwin in his airship was installed in the Tomlinson outfit, and the Captain himself used a special water-cooled Curtiss motor.

The other contestant was John Roeder, of White Plains, with an unique affair in which the gas bag was supposed to lift only part of the weight.

After several days of preparation and waiting for the strong winds to subside, Baldwin and Tomlinson got away about 10 o'clock on the morning of September 29. The day was perfect with a slight breeze blowing from the west. With apartment houses facing the Square on two sides, Riverside Drive on the west, with the Hudson a hundred feet below and Grant's Tomb on the north, the get-away was a particularly pretty sight. Tomlinson was first and had gotten almost out of sight before Baldwin started.

The plan Tomlinson followed was to let the wind blow him to the eastward of the Hudson, and then head directly west into the wind at intervals so as not to get too far from his course. Though this system was employed several times during the journey, he kept getting far to the east and finally landed on the farm of Howard Willets at White Plains, a distance of 20 miles. The landing was necessitated there on account of the oil supply tank leaking badly. The ship returned to the start the next day.

Captain Baldwin immediately headed out over the Hudson River, and then turned northward along its course. After passing Ft. Washington, the two top members of the frame broke just back of the engine. It would have been dangerous in the extreme to have gone ahead with this damage unrepaired, and the moment it happened the aeronaut steered the ship down to the water. It was then allowed to drift inshore, while many willing hands lifted it on the rocks. The gas was let out of the bag, and the ship returned to the square. The distance made was only four miles. Although the rules allow as many trials as desired, no second attempts to reach Albany were made by either of the contestants. Roeder did not put in an appearance until three days after Baldwin's and Tomlinson's attempts, and by that time all vestige of the two latter ships had been removed, Captain Baldwin taking his ship to St. Louis.

THE BALDWIN AIRSHIP.

The bag measured 86 ft. in length by 20 ft. in diameter at the greatest width, tapering to 18 ft. at the rear, total capacity being 19,000 cu. ft. The framework and other details of the ship are the same as has been given in previous issue of this magazine, with the exception that the 25 h.p. water-cooled motor is being used. The bag is made of double walled silk weighing 6½ ounces to the square yard, with a strength of 60 to 65 lbs. per sq. in.

TOMLINSON'S AIRSHIP.

The Tomlinson bag measures 86 ft., but has a diameter of 18 ft. and 16 ft. respectively, and a capacity of 17,000 cu. ft. This bag is made of single-walled cotton weighing 6 ounces per square yard, and having a breaking strain of 50 to 60 lbs. The 15-h.p. air-cooled motor formerly used by Baldwin has been installed in this airship.

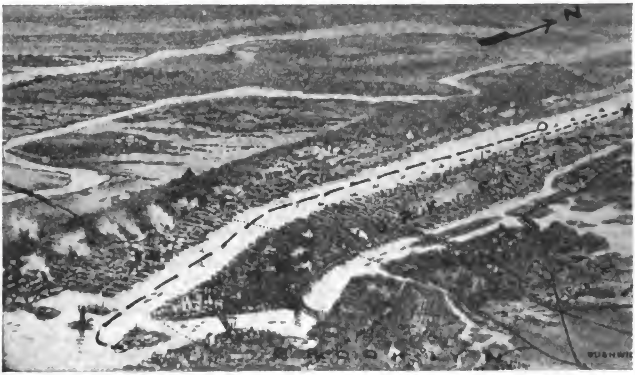
STEVENS CAPTIVE BALLOON.

The captive balloon used by the Sanitary Department of the Hudson-Fulton Commission at the grounds of the Colonial Yacht Club at 140th Street, installed by Leo Stevens, was a distinct success, although the wireless intended to be tried was not experimented with. Communication with the ground was had by telephone at all times. The wires running from the instruments in the basket followed the cable to the ground and thence to the switchboard in the club house. Friends of Dr. Lucas, of the Sanitary Committee and Mr. Stevens' were all given opportunity to go up in the balloon, and some of them enjoyed the naval parade and the night illuminations from the basket of the captive.

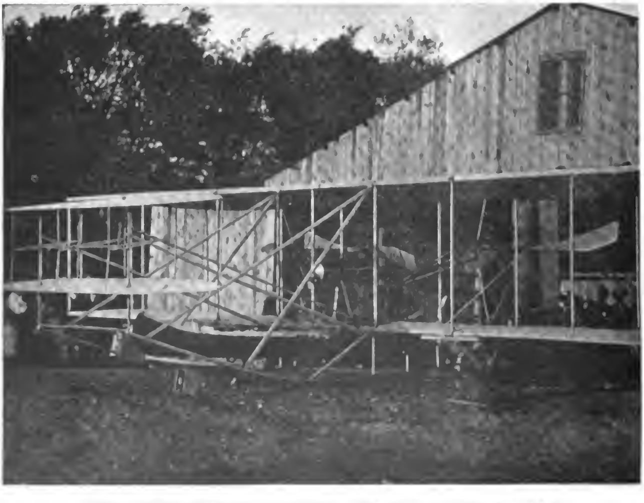
PERKINS AND HIS KITES.

Samuel F. Perkins, the professional kite flier, has had a busy time in New York during

AIRSHIPS AND AEROPLANES FLY IN

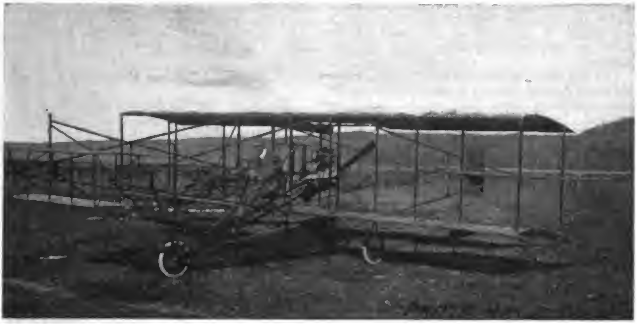


Route followed by Wright in his Hudson Flight, showing Baldwin's start and finish

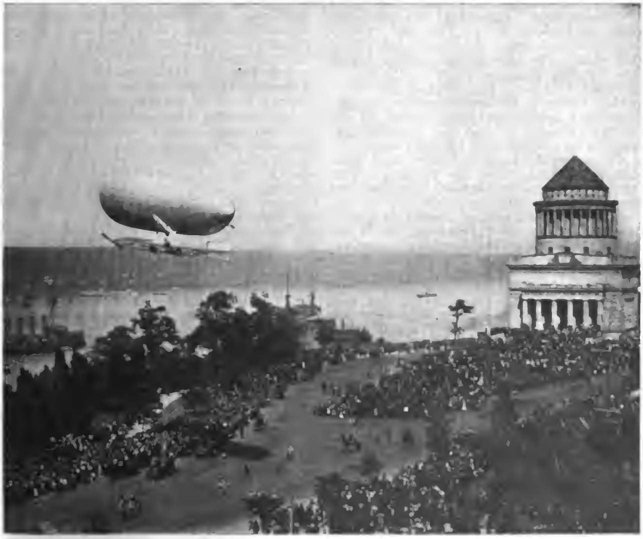


Wilbur Wright's Machine, with Canoe Attached, at Governor's Island

MEMORY OF HUDSON AND FULTON



Curtiss Aeroplane Used at Governor's Island



Baldwin Heading for the River

the Hudson-Fulton celebration. At various places in the city kites were flown with advertising banners attached. At Madison Square a balloon was used on calm days and nights to carry the banners and flags, and a searchlight is employed at all times of the night to illuminate the kites, signs and the balloon.

The day that Curtiss was advertised to make his flight around Grant's Tomb, the newspaper men assembled there were nicely fooled by one of Perkins' banners. With all eyes strained to catch the first glimpse of the Curtiss machine as it came up the river, one sharp-eyed *Globe* representative spied a yellow streak far down the river, moving, it seemed, extremely slow. All were notified that Curtiss was on his way, and the crowd along Riverside Drive waited to catch the first view. As glasses were procured, the "aeroplane" was found to be a banner emblazoned with the sign "Duplex Razors" tied to a tug boat. This tug boat paraded the river and around Governor's Island. As a sensation a dummy man was occasionally dropped from the kites. The Perkins outfit will shortly start on a tour of the country.

World Prize Renewed.

The *N. Y. World's* $10,000 prize for a flight or sail to Albany during the Hudson-Fulton Celebration has been renewed, open until October 10, 1910, with the elimination of any entrance fee. There are no conditions except that the trip must be continuous.

George L. Tomlinson is building an airship of his own design and promises to be ready by the middle of November. Baldwin will, no doubt, have another try.

MADISON SQUARE GARDEN AERO SHOW

FROM September 25 to October 2 there was held at Madison Square Garden an aeronautical exposition in connection with the Business Show. This was arranged and conducted under the auspices of Alfred Chasseaud, who already announces a second one for May of next year.

While little time was given to the show, which occupied the entire gallery of the Garden, a surprisingly large number of exhibitors showed up and the character was such as to promise well for the next.

Of course, the freak models were all there, but the showing made by actual manufacturers of aeroplanes, motors, propellers and accessories was most creditable.

The big feature was, of course, the *Curtiss aeroplane* sold to A. P. Warner by the Wyckoff, Church & Partridge company.

Two other full sized aeroplanes looked considerably like some of the Curtiss relations. One was the *Francois Raiche* machine which got off the ground a few days before at Morris Park. The other was that of *Pincus Brauner* and *A. J. Smith.* The Raiche machine was described in the September number of AERONAUTICS, as well as the Curtiss machine, with full drawings. The Brauner-Smith machine is very well built indeed, and surely ought to do something soon. It was not quite completed for the show, but will probably be having its trials within a month. As soon as trials are completed it will go *en tour* giving flying exhibitions. Mr. Raiche is prepared to accept orders for his machine or to do special work to designs.

Messrs. *C. & A. Witteman* showed two of their regular type biplane gliders. These were particularly finely made and illustrate the advance that has been made. Orders were taken during the show for several gliders and a power machine contracted for payment subject to demonstration flight. Starting in a small way, the Wittemans have built up a surprising business. They have recently completed a power machine for Miss E. L. Todd, which is now at Mineola.

Adjoining this exhibition was that of the *Silverite Metal Co.*, who had castings of strut sockets, beam connections and other parts.

The magazine AERONAUTICS had a most attractive stand, with a background covered by photo enlargements of well-known aeroplanes and airships, made and loaned by the aero photographer, *Edwin Levick*. A constant stream of visitors inspected the pictures and bought copies of the only aeronautical journal in America.

The exhibit of the *Hartford Rubber Works Co.* was a distinct surprise. Experimentors have had all kinds of trouble to find suitable wheels and tires, and here, all of a sudden, was a manufacturer with special tires in stock and a catalog. To the Hartford people must be given the credit for being the pioneer in this country. Three weights and sizes were shown, each with its name moulded in the rubber, "Aeronaut," "Aviator" and "Aeroplane."

Then there was shown "Hartford Aero Varnish" for use on balloons and aeroplanes. The show developed a surprising number of orders for various tires for aeroplanes, and the company is already behind on varnish orders. This amber-colored varnish will make a cloth gastight with one coat, and is easily applied with an ordinary brush. There is a large amount of rubber in the solution, and with the drying, it incorporates itself in the fabric, after which it does not shrink nor expand under all atmospheric conditions. The specific gravity is 0.95.

The *Requa-Coles Co.* was unable to show a finished motor, but had at their well-equipped stand some vital parts to show the kind of material and workmanship entering into the manufacture of the motors they are now putting on the market. A beautifully made true screw propeller was shown, as well as small model propellers attached on an electric motor.

J. A. Moller was another exhibitor of propeller. He showed a well-built metal screw of his own design.

The *Livingston Radiator Co.* had on exhibition two special aero radiators. These were of the type illustrated and described in AERONAUTICS some time ago. The Livingston company has made a special study of the needs of the aeronaut and aviator, and has developed a fine piece of cooling apparatus.

A stock motor was shown by the *American & British Mfg. Co.* This motor is not particularly light but stands well, and several machines have them installed now. Good prospective business was reported by this company's representative.

The *R. I. V. Co.'s* ball-bearing exhibit occupied a prominent place. The R. I. V. bearings, described in a previous issue of AERONAUTICS, have been used with the utmost satisfaction by aero experimentors, and they are used by many of the best known automobile manufacturers.

Charles J. Hendrickson exhibited his monoplane glider and represented the *C. E. Conover Co.*, manufacturers of aero cloths. This company is prepared to furnish treated cloth of any material or to treat any material desired by the purchaser.

The show was made particularly interesting on account of the great number of small working models, some of which actually flew.

Mr. Church, of the *Aeroplane Toy Co.*, had a lot of fun with his butterflies, which he flew all over the Garden. A great many of these were sold at 5 cents each for Hudson-Fulton souvenirs, showing a picture of the Clermont and the Wright aeroplane on the wings. They operate with an elastic band, and fly about 50 ft. They are also being put out as advertising novelties.

The Aeroplane Toy Co. promises to have most of their complete line of toy flying machines ready for the market before the end of the month. The prices range from 5 cents to $50.00, and they fly from 40 ft. to several hundred yards. The line will consist of monoplanes, biplanes, helicopters, gliders, parachutes, kites, etc. One model in particular which promises to be a very popular toy is patterned after the Bleriot type which flew across the English Channel. This model retails for 35 cents and is almost indestructible. It flies about 60 ft.

Mr. Church intends to build a full-sized machine in the early spring, which he claims will easily travel a mile a minute, and he also says that nothing short of a hurricane will keep him from flying. He is not prepared to show the model of this machine at present, but will exhibit it at the Boston show, as by that time he expects to have it fully covered by patents.

William Morgan was another exhibitor of toys, both aeroplanes and helicopters. These sold well at 50 cents and $1. The aeroplanes, made of tissue paper, with twin propellers, fly about 50 ft. The helicopters go straight up a considerable distance.

Dr. William Greene had a very extensive booth. By kites of various kinds he showed the evolution of the flying machine beginning with an imported Chinese kite, a duplicate model of the first kite made by them some 3,000 years ago. Then there was a Japanese hand painted butterfly kite transcendent material, a long tail kite, the first modern tail-lers, the box, French war kite for photography, and the modern aeroplane kite. The model Bleriot XII, made on a scale of 1 in. to the foot, was a beautiful piece of work and complete to the last detail. To the popular nature of the exhibit was credited the number of people who constantly surrounded it.

Octave Jean exhibited his flying machine, with rotating paddles having feathering blades.

The exhibitors of *large-sized models* were: A. J. Stadtler, O. de Martini, the Buck "Airship," J. F. Cox, "the Vacu Aero Car," S. Andrews, N. Y. Aerial Mfg. Co., J. C. Press, and Philip W. Wilcox. The Martini model was a well-built Bleriot type, with warping wing tips under the main planes. A small gasoline motor was fitted.

The *small model exhibitors* included: William Harrison, Thomas Penn, Carl Bizzozero, Albert Malasomma and C. H. Rogers.

"I want to say this for 'Aeronautics,' that it is the most valuable piece of literature that it has been my pleasure to secure, for the simple reason that it publishes the up-to-date experiments, improvements, and success of hundreds of aeronautical students which enable one to benefit by others' experiments that would not only take an enormous amount of money, but years of time to acquire. The benefit of 'Aeronautics' enables us to accomplish in a year's time what would take a life time to produce. It makes it possible to keep in touch with the whole alphabet of aeronautics. I have always read everything I could secure on the subject of aerial navigation for the last twenty years. The men that really fly are the ones that produce something in reality and try it; and if it fails, produce another idea in reality and try that; and the results of these men's brains are what we get in 'Aeronautics.' That is why the publication has been the success it has. It appeals to the mechanical mind, and as the art of flying progresses with rapid strides, there is no question why 'Aeronautics' will not progress with the same strides. I wish it double the success it already has.—H. C. R."

IN THE WORLD OF AVIATION

Monoplane Flies in Ohio.

L. W. Bonney of Sandusky, O., has built an interesting monoplane, with which he states he has flown about 600 yards at a height of 20 ft. In a subsequent trial it was smashed, due to breaking of the propeller.

The wing spread is 22 ft., by 7 ft. depth, set at 10 degrees dihedral angle. A 6-ft. propeller, geared 1-2, is driven by a 24-horsepower air-cooled motor through motorcycle chain. The steering both ways is effected by a two-way tail with about 9 sq. ft. surface in all, governed by an automobile steering wheel, which turns left and right and pushes out and in, as the Curtiss machine. The propeller is mounted on ball bearings and the engine shock is taken up by a compensating sprocket.

The plane framework is of California redwood ¼ by 1 in., laminated. Rubberized cloth is used for the surfaces. The whole is mounted on a triangular chassis, running on 20-in. wheels. The motor rests on this chassis and the chain drive runs up to a sprocket on the front edge of the plane. In its way it resembles Santos-Dumont's "Demoiselle" more than any other. It gets off the ground at a speed of 20 miles. The weight is 320 pounds. A new and larger machine is now being built.

Nelson Aeroplane Flies in Connecticut.

The first aeroplane to fly in Connecticut has been that of Messrs. N. J. Nelson and Albert S. Swanson.

The machine was tried out at Charter Oak Park, Hartford. The first time it made several short flights of about 50 ft. at a height of a yard. Some changes were then made and was tried a few days later, but the wires from the rear rudder had not been properly adjusted and the machine ran into a fence. A new machine is now being constructed, using the same motor and some of the parts that were not damaged.

Both young men are but 22 years of age, and the aeroplane was built in three months, working at night.

DETAILS OF APPARATUS.

Main planes, of oil cloth, 32 ft. by 5 ft.; forward rudder, 2½ ft. by 8 ft.; total length, 25 ft.; motor, 24 h.p.; 4¼-in. by 4¼-in. water-cooled, 4-cylinder, driving a 6-ft. by 4¼-ft. propeller at 1,000 r.p.m. This gave a thrust of 125 lbs. Weight of motor, 165 lbs. The front wheel and the rear rudder are steered simultaneously by the feet. Maple and whitewood are used throughout. The entire weight of the machine, without operator, is 475 lbs.

Willard Flies 26 Times One Week.

Willard is to fly at Point Breeze track, Philadelphia, October 16. During the week at Richmond he made 26 flights in six days. This is going some. He has obtained wonderful control of the machine, and within the confined grounds he repeatedly stopped the machine within a yard of the fence. Part of the planes has been recovered.

Richmond, Va., Oct. 4.—Using a Curtiss aeroplane owned by the Aeronautic Society, C. F. Willard made two brief but successful flights at the state fair grounds here this afternoon. Willard climbed to the seat of his machine at 5:15 o'clock and rose gracefully to a height of 25 ft., sailing to the western end of the field and passing over many tents. At the western end of the field he made a landing, and after a few minutes rose again, returning to his starting point without mishap. Each flight occupied 30 seconds.

The machine came here from Athens, Pa., where it made five short flights. Magneto trouble was to blame for the failure to make others.

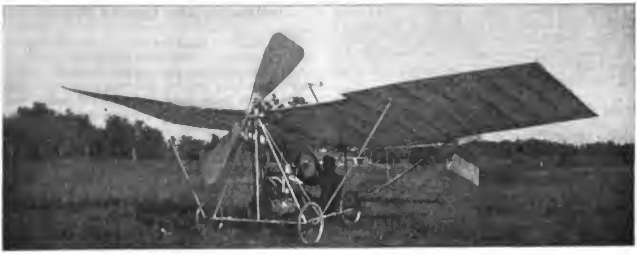
More About the Sellers Aeroplane.

The flights with 7 h.p. made by Mr. M. B. Sellers (mentioned in the October number), have created considerable comment. We are able, in this issue, to give some additional details.

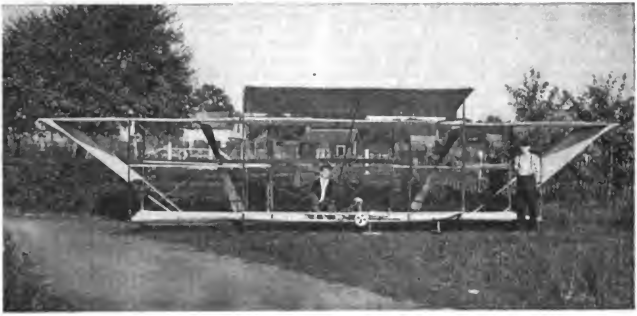
The machine described last month in the patent specifications is merely the machine as it has been used as a glider. It has necessarily been changed somewhat, and improvements made for operation as a power machine.

The weight of 210 lbs. includes the operator; the machine with engine weighs 78 lbs. It is light but not frail. This same machine was used in gliding and towing from July intermittently till October, 1908, when the present chassis was attached. This chassis is a combination of wheels and runners. The wheels are held in a lowered position by a device which automatically releases them as soon as the machine rises, thus permitting it to make the preliminary run on wheels and to alight on the runners. Flights were made by towing to learn the use of the steering gear. A weight was added in place of the engine, and it was found that a tow-line pull of 40 lbs. was sufficient for flight. Then the engine was attached.

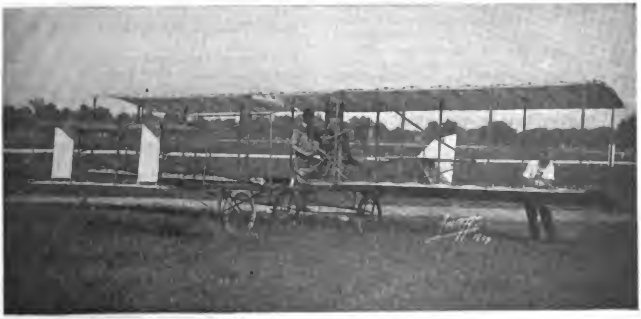
Mr. Sellers states: "On December 27, sixteen short flights of about 100 ft. were made. A dropping weight was employed to accelerate during the preliminary run. The propeller thrust was not sufficient, but before abandoning the direct drive, I decided to give my attention to the study of propellers and no more flights were made till recently.



The Bonney Monoplane



Fred. T. Childs Biplane



Nelson Aeroplane

"This aeroplane was designed for slow flights. The wings are 18 ft. by 3 ft., and its area about one square foot per pound weight.

"I have under construction one intended for higher speed, having only two planes in steps and spreading about 100 sq. ft."

Fred. T. Childs Builds Biplane in Ohio.

Fred T. Childs, of Akron, Ohio, has built a biplane. The top surface measures 36 ft. by 7 ft., and the lower 26 ft. by 7 ft., the distance between the planes being 6 ft. The total surface is 578 ft. The forward horizontal plane for steering it up and down measures 12 ft. by 5 ft. There are two side surfaces measuring 6 ft. by 7 ft., set at a dihedral angle, the idea being that these will maintain equilibrium during flight on the theory that a tip to one side or the other will cause an increased resistance on the side tipping over, with a resultant righting of the machine. Two 7-ft. propellers are placed in the rear. These are made of hard wood blades, aluminum and hubs pinned to ¾-in. propeller shaft. Phosphor bronze bearings are held to the frame by U bolts. Ordinary light canvass is used to cover the planes, and the entire structure is made of 1¼-in. square hickory.

Vertical rudders to guide the machine to the right or left are not shown in the photograph. They are located about 10 ft. back of the rear plane.

The total weight of the machine, without the engine, is 250 lbs., and is very rigid. For exhibiting the machine at the county fair, a 2-cylinder, 7-h.p. Waterman engine was installed. The motor intended to drive the machine will be 35 h.p., air-cooled. The weight is promised to be not over 150 lbs., including the magneto and accessories. The propellers are now driven by cable, but it is intended to try chains and sprockets. Aluminum brackets are used throughout the machine, which is braced with steel wire. The propeller is placed a little above midway between the two surfaces. The front horizontal rudder is located 6½ ft. from the front of the planes and is 18 in. higher than the top surface. This is operated by a rod running from the forward edge to the operator's side on the front of the lower surface.

Aeroplane in Memphis.

E. F. Stephenson of Memphis, Tenn., is working on a monoplane type of apparatus, with a view to being able to rise without a running start and to automatic stability.

George Steingruber is another Memphian who is working.

Aeroplane To Sell Lots.

A land company has engaged the Bleriot aeroplane, which was on exhibition at S. B. Bowman's automobile store, to make flights Oct. 12 and 13 at Ampere, N. J.

Changes in the Curtiss Machine.

The machine used by Curtiss at Governor's Island contains a number of different features from that sold the Aeronautic Society.

The upright post at the front of the front rudder has been lightened and the small triangular vertical surface removed. Galvanized cable is used throughout the machine. The tip controls are much larger, extending now from the second from the end strut to 40 in. beyond the outermost.

In case of a wet landing, a pyramid-shaped pontoon is provided on the skid running from the front wheel to the axle in the rear, which has been curved downward in the center so as to come closer to the ground. Under the second strut from each end a metal gasoline tank has been strapped.

The radiator has been placed further forward and the water pump is in front of the gear case instead of at the rear of the engine. The engine bed is larger and of laminated spruce. In addition to the foot-controlled throttle, there is a convenient lever at the left hand attached to the same mechanism. Instead of the throttle normally being wide open and closed by the control, it can be opened or closed at will. The shoulder brace is now hinged to the seat and is stayed with two extra bars. An emergency oil gun is placed on the center framework, with the chamber continually filled with oil, for squirting an extra supply of oil into the cylinders on starting, or if the oil pump should give out. A refinement in control is noticed. The wires working the vertical rudder have been run through the center of the bamboo rods all the way to the junction with the vertical struts, where they run over pulleys up to the steering wheel.

The machine used abroad is on exhibition at Wanamaker's store. In November it will go to Boston for a month's still-life exhibition at $4,000 per. Aeroplane business is "looking up!"

First Foreign Aeroplanes in N. Y.

The first of October saw two foreign-built aeroplanes arrive in New York City. One is the identical machine with which Farman made the new world record at Rheims, imported by J. B. Curzon, who will use it in giving public exhibitions throughout the fairs of the country. An aviator came with the machine. Without any preliminary work whatever the machine went direct to St. Louis for competition there in the aeroplane contest, with Curtiss as the only other competitor. No flights, however, were made, the operator seeming to be unable to get off the ground.

The other is a Bleriot monoplane, type "XI," imported by Ralph Saulnier, who will also use it in giving exhibitions. It is now on exhibition at the automobile salesroom of the Sidney B. Bowman Automobile Company. Saulnier will act as demonstrator with this machine for Mr. Bowman, who has options on eight machines, three of which can be delivered in December and five for January, provided orders are received.

When asked if this Bleriot machine were intended for delivery to H. Hayden Sands, of New York, who is reported to have purchased a Bleriot machine, Mr. Schultz, of the Bowman Company, stated that all he knew about Mr. Sands was that he returned a couple of weeks ago on the same ship with Mr. Bowman. Mr. Bowman is agent for the Clement-Bayard airship and has a large model of it in his show window.

Rinek Machine Out for Trials.

A fence has been taken down to give greater space for the running start for the Voisin-like biplane of C. Norvin Rinek of Easton, Pa., which is now ready for experiments, equipped with a new motor. The machine is built entirely of steel tubing, and weighs, without the motor, about 700 pounds.

Wing tips are attached to the ends of the main planes for stability, and can be operated either separately or in connection with the vertical rudder.

A description of the apparatus was given in the March issue of *Aeronautics.*

E. G. Lewis, the owner of the *Woman's Magazine* and other publications, is expecting to construct an aeroplane in his own shop this fall and winter.

Fred H. Fleege of Detroit is building a unique aeroplane, to be completed in a short time, and measures only 7 ft. long and 4½ ft. wide.

Selfridge Monument.

A monument to Lieutenant Thomas E. Selfridge is being erected at the expense of his father in the cemetery at Arlington. This will be the largest stone in the Arlington National Cemetery. The stone consists of four pieces—a shaft 18 ft. 11 in. by 2 ft. 3 in.; a plinth and die 4 ft. by 4 ft. by 5 ft. 6 in.; second base 5 ft. 3 in. by 5 ft. 3 in. by 1 ft.; base 12 ft. 6 in. by 12 ft. 6 in. by 1 ft. 10 in. The whole structure then rests upon a subbase of rough ashlar 12 ft. 10 in. by 12 ft. 10 in. The construction work is already under way.

Captain Ferber Killed in a Fall.

On the 22d of September Captain F. Ferber, the chief apostle of aviation in France, and universally known and esteemed, was killed in a trial flight on a Voisin aeroplane at Boulogne, France.

The accident was peculiar. He made a good start after a run of about 100 yards against a head wind, rose to a height of about 25 ft. and flew a kilometer straight. Then he determined to turn to the left, and in so turning he lost altitude, the left wing careened downward unduly and struck a hummock. He endeavored to alight, but the wheels then dipped into a small drainage ditch, thus stopping headway so suddenly that the whole machine turned a somersault fore and aft and the framing carrying the motor fell upon Captain Ferber, crushing in his breast and stomach. He died from internal hemorrhage within half an hour.

Captain Ferber was a distinguished artillery officer and aviator. Born in Lyon, Feb. 8, 1862, he graduated at the Polytechnic School, was stationed as lieutenant at Clermont-Ferrand and Belfort, made a captain in 1893 and commanded the Seventeenth Alpine Battery at Nice from 1900 to 1904.

A chance magazine article on aviation had aroused in him in 1898 an interest which never subsequently flagged; he built several gliding machines and tested them with varying success and indomitable pluck. Becoming aware of the success of the Wright Brothers through correspondence with Mr. Chanute, he endeavored to secure the first fruits of the invention to France by inducing the government to buy it. Two missions were sent to Dayton, the first a private one in the interest of a syndicate and the second by the government direct, but the negotiations failed, as terms could not be agreed upon.

In 1904 Ferber was called to the government aeronautical establishment at Chalais-Meudon. There he built, partly at his own expense, his aeroplane No. 8. This being ordered out of the shed to make room for a balloon was wrecked by a storm. Disgusted by this, he in 1906 obtained a leave of absence for three years and entered the service of the Antoinette Motor Co. temporarily as engineer. There he supervised the construction of motors and screw propellers and built in 1908 his aeroplane No. 9, which at once gave good results. Since then he had been making flights and participating in various contests. He had gone to Boulogne on a proposal to attempt a flight across the British Channel, but, as he had been recalled to military service, the discipline regulations prohibited exhibition under his own name. He had therefore entered as "De Rue," this being the name of an estate which he owned in Switzerland.

Captain Ferber was a charming lecturer and writer, with a dash of humor. Besides many articles for the press, he published four or five pamphlets or books on the progress of aviation, which contain fuller details of the inside facts of its development than any other works which have been published. To him more than to any other man is due the enthusiasm aroused and the progress made in aviation in France. He was universally esteemed and the whole French press has been deploring his loss in lengthy articles while expressing its sympathy for the widow and three children which he leaves behind him.

Farman Aeroplane Begins Exhibitions.

The Farman aeroplane imported by J. W. Curzon is scheduled for exhibitions at Cassville, Mo., Oct. 12.

P. Y. Alexander Offers Big Prize.

Believing that the suitable aeroplane motor is not yet at hand, or to encourage better construction, Patrick Y. Alexander, the international patron of aviation, has offered $5,000 for the first British aero motor of 20 h. p. which, under certain conditions, will run 24 hours continuously.

Who will offer a like prize in America?

Van Anden Flies.

New York, Oct. 11.—Frank Van Anden, a member of the Aeronautic Society, made a flight in his aeroplane at Bay Shore, L. I., today, but it was cut short by the breaking of the propeller.

Mr. Van Anden, who lives in Islip, towed his machine out to the golf links by an automobile.

It rose gracefully and traveled about 500 ft. Then something was seen to be wrong and it began to descend, landing with hardly a jar.

WITH THE LIGHTER THAN AIR

Balloon Ascent Ends Disastrously.

The balloon trip made by Dr. Lucas and A. Leo Stevens in the "Stevens 24," which was being used as a captive during the celebration at the Colonial Yacht Club grounds on the Hudson River, ended in the unfortunate death of two aeronautic enthusiasts, "Teddy" Baker and Parker Norton, editor of a newspaper in Mineola, both of whom were residents of that town. They became interested in aeronautics through the flights of Curtiss and Willard at Mineola, and those who had the pleasure of meeting these two gentlemen will realize the loss sustained.

Dr. Lucas and Mr. Stevens cut the balloon loose at the yacht club grounds and sailed in a northeasterly course, passing directly over the Morris Park grounds of the Aeronautic Society, where they could see the various aeroplanes built by the members and the big tent erected by Dr. Riggs for his airship. From there the balloon crossed Long Island Sound and, curiously enough, passed over the aviation grounds at Mineola, where Miss Todd now has her aeroplane. Long Island was crossed, and on reaching the water on the southern shore, the balloon was maneuvered up and down to take advantage of the currents of air to carry it lengthwise of the island, the landing finally being made at Hicksville. The theory of Paul Nocquet, who met his tragic death in the marshes of Great South Bay, was proven correct in this trip, as in the early evening the lower current of air blew in shore, and this was taken advantage of by Mr. Stevens on this trip.

A. R. Pardington followed the balloon in an automobile and brought back Dr. Lucas and Mr. Stevens in his car to a hotel in Mineola. A Simplex demonstrating car with William Watson as driver was obtained in Mineola to go to Hicksville to bring the balloon in. Baker and Norton went with the car. The balloon was packed up and put in the machine, and on the way back the automobile was driven at high speed. In making a short turn to avoid a horse-driven vehicle, the car ran off the road and through a fence and hit a tree, making a wreck of the machine. Both Baker and Norton were instantly killed, the driver escaping with some minor injuries, though he spent a couple of days in the Mineola hospital.

Keen Competition for Herald Trophy.

As the balloon season draws to a close, interest to win the Boston *Herald* trophy increases. There have been a great many attempts made this year to win the prize by the amateur aeronauts in ascensions from Pittsfield, North Adams, Springfield and Fitchburg. The trophy goes to the pilot landing nearest the geographical center of Boston Common during the year 1909. The six pilots in the advance are: June 26, Glidden, balloon "Boston," Fitchburg to Lexington, 10 miles; June 20, Van Sleet, balloon "Pittsfield," Pittsfield to Holbrook, 12 miles; May 8, Forbes, balloon "North Adams," North Adams to Bolton, 26 miles; April 22, Randall, balloon "North Adams," North Adams to Byfield, 30 miles; May 4, Flagg, balloon "Boston," Fitchburg to Atkinson, 32 miles; September 30, Clayton, balloon "Boston," Fitchburg to Kensington, 37 miles.

"I think the magazine is very good and I thank you for the copy sent me. The topics discussed have just enough range to make the magazine good. You have given each subject about the right amount of space to suit me and I think you are to be commended on its publication. I like the longer articles when I have time to read them, but I also like the shorter articles which give the report of a flight or an ascension in a nutshell."—P. H. E.

New Dirigible Balloon.

Indianapolis.—Capt. George L. Bumbaugh is putting the finishing touches to a large dirigible balloon which has been constructed at the Indianapolis motor speedway.

On the first favorable day after the balloon is finished Bumbaugh and Fisher said they would attempt to sail over the city, and after circling the Soldiers' Monument, continue to Dayton, O. The balloon is a cigar-shaped affair, 166 ft. long and 32 ft. in diameter, exclusive of the mechanical part and framework beneath the bag. The big airship will be much like the small dirigible which Bumbaugh uses for exhibitions.

Airship Collapsed.

South Bend (Ind.), Oct. 8.—William Mattery's balloon "America" collapsed to-day at a height of 100 ft. Both Mattery's wrists were fractured when he struck the ground. The machine, valued at $3,000, was destroyed. When Mattery started the motors of his airship a crowd pressed about him and he was obliged to steer upward at a sharp angle. The propeller caught the gas bag and tore it open.

Lahm Cup Changes Hands.

Richmond, Va., Oct. 13.—Col. Max C. Fleischmann, ex-Mayor of Cincinnati, piloted by A. H. Forbush, of New York, in the balloon "New York," landed in Chesterfield Co., 20 miles south of here, after a voyage of 19 hr. from St. Louis. Entry was made for the Lahm Cup and the required distance, 475 miles. was beaten. The distance measures about 710 miles on the Government map.

FIRST NATIONAL GUARD ASCENSION

By Geo. B. Harrison.

VIA AEROPLANE DELIVERY.

A BALLOON ascension strictly military throughout was made from Los Angeles, Cal., September 29, by the aeronautical squad of Company A, Signal Corps, National Guard of California. While held primarily in connection with the annual convention of the United States National Guard Association, held at Los Angeles that week, it was also a part of the regular work planned by the aeronautical squad for trial of a conventional code devised particularly for signaling from a balloon by utilizing the Meyer code with action flags.

All the work of laying out, inflating and handling the balloon, piloting it and caring for it after landing was done by members of the company. The three members making the ascension were Pilot George B. Harrison, Corporal Vance Worden and First Class Private W. A. Hall. Trailing them on the ground were two automobile loads of enlisted men commanded by Captain H. W. Slotterbeck and First Lieutenant H. T. Bathey. Visual signals were easily read and exchanged, being taken at a height of 3,900 ft. above the ground.

The balloon used had a capacity of 77,000 cu. ft., but owing to the exhibition side of the voyage, Captain Slotterbeck ordered only a short trip to be made, and a landing was effected after a journey of about 20 miles. A spot was selected protected by a fringe of high trees, and the landing was made by releasing the gas through the valve and without ripping the balloon.

The trip was recorded on a chart for ballooning devised by the aeronautical squad of Company A. The chart shows the points passed over, thus giving the directions taken, and the line plotted to demonstrate the trip also indicates the altitude at all stages of the voyage.

TO MAKE AERIAL WAR.

The squad is working out a large aerial map of the region around Los Angeles, combining for this the designations used by the Geological Survey for the contour, elevations and other ground work and those of the Hydrographic Office on the pilot charts for the air currents, thereby standardizing the aerial map so it may be the more easily read. Balloon ascensions will be supplemented by kite flying and other methods to obtain the desired data, and the signaling work of the company, such as the selection of visual points, will be carried on at the same time.

The aeronautical squad of Company A has been organized for two years, but its limitations have prevented more thorough work until this year. Captain Slotterbeck has entered enthusiastically into the aeronautical work, and plans to carry it on every month in the year, which is possible in Los Angeles. A number of world's records are already held for signaling by his company, including that of transmitting messages over land and sea, and he is ambitious to see it in front in the aeronautical work of the National Guard. A system of tactics for handling a military balloon for observation purposes is already being developed under Captain Slotterbeck's supervision. An ascension at night, with signaling from the balloon with a tungsten electric light to one squad on the mountain top and another at the site of the harbor fortifications, the two latter using heliographs, is planned for this winter.

News In General

NEW AERO MOTORS

Easton Motor.

The Easton Cordage Co., Easton, Pa., has now entered the aero engine field with a promising looking motor; two sizes are being made.

They have been designed with the view of giving ample power with a minimum amount of weight. The very best of material obtainable enters into their construction, and the workmanship is fully guaranteed.

Each engine consists of eight cylinders arranged v-shaped, using one cam shaft for all cylinders, size being 3¾ in. by 4 in. for the smaller engine, and 4½ in. by 4½ in. for the larger. They are conservatively rated as to horsepower, as they will deliver considerably more power than the rating given.

Some slight changes have been made to the engine, differing from the illustration shown in the advertisement in this issue; namely, the spark plugs are placed on the carburetor side of the cylinder and the exhaust piping on the outside of the cylinder.

On the smaller engine the heads with the valves are separate from the cylinders, and with the water jackets are made of a special aluminum alloy of great strength, which during the past summer, notwithstanding the severe testing under which the engine was operated, have shown no defects.

Both engines are equipped with Bosch magnetos and the Schebler carburetor, one carburetor being used for the eight cylinders, so arranged that each cylinder has equal length of pipe leading from the carburetor.

The oiling of the engine is operated by a pump enclosed in the crank case, driven by a gear from the crank shaft. The pump can be disconnected and taken out of the crank case by removing two bolts.

The action of the pump is to force the oil through leads to each of the large bearings and through oil ducts in the crank shaft to the connecting rod bearings, the oil returning to the bottom of the crank case.

The engine is built as a complete unit with a radiator ready to run. The company will also furnish propellers, either wood or metal if so desired, for direct connection to the engines.

Elbridge Motor for Aeronautics.

The well-known Elbridge Engine Co., Rochester, N. Y., makers of 2-cycle motors, are bidding for the aeronautical business in competition with makers of extremely light engines. The Elbridge motor has already found favor with a number of experimentors on account of its simplicity and comparatively light weight. In a subsequent issue we will give the details of the type now put on the market for the work.

Bates Motor Now Ready.

Carl Bates, whose aeroplane has been illustrated in AERONAUTICS, is putting on the market a special motor which he has designed and for which he claims very light weight. He is making plans to get out a biplane for sale to the public.

Requa-Coles 50 H. P. Motor.

The Requa-Coles Co., 225 West Forty-ninth St., New York, is now ready to book orders for their new aero motor.

By referring to the September number of AERONAUTICS, one will note a distinctive feature in connection with this motor which has been designed by and is being built under the patent of Hugo C. Gibson. The patented device used is for doubling the possible maximum horsepower developed by a normal four-cycle engine, and this results in the retention of ample weight in the vital parts, where strength is absolutely necessary. In fact, the strength of such parts as the crank shaft, bearing surfaces, etc., has been increased. On the basis of the abnormal power claimed to be developed, the actual weight per horsepower would be below that of all motors actually in use in aeroplanes, calculated on the basis of actual horsepower produced and not on the rated horsepower.

The Requa-Coles motor is of the two-cylinder 90 type, both cylinders in the same plane, with valves in the head. These are 4½ by 5 in., water cooled. The speed is 2,500 revolutions per minute. The horsepower is given as 50, the motor being sold on the understanding that it is to show this amount on the brake for five hours, same to be tested on the Automobile Club of America's dynamometer. Ignition is by Bosch high-tension magneto, with a secondary system by coil and batteries. From an oil well in the crank case the oil is delivered by pump to each bearing. Bronze is used on the bearing surfaces. All heavily stressed parts are of Krupp chrome nickel steel, while the crank case and least strained parts are of McAdamite. The weight is given as 200 pounds.

The company is prepared to deliver laminated true screw propellers built to order to suit particular conditions.

Cleveland Inventor Has Aero Gun.

Dr. S. W. McLean, of Cleveland, O., has built an airship gun which has received some preliminary tests mounted on a Baker electric truck. The gun itself appears to be the usual naval type of semi-automatic, firing a six-pound shell. It is capable of delivering 200 shots per minute. The mounting has been altered to allow of a maximum elevation of about 45 degrees. According to Dr. McLean, the difficulty is to devise a missile which will damage the airship, even if it does hit it. The ordinary shell will not explode under less resistance than that offered by a one-inch pine board. The idea of the new gun is to riddle the dirigible or aeroplane by a number of shells, not depending on their explosion. For this purpose mobility is the prime requisite.

The McLean Gun on a Baker Electric Truck

News on the Coast.

A Chinese student of Oakland, Fung Joe Guey, has built a biplane 25 by 6 equipped with a 6-horsepower motor. The chassis is a rectangular frame supported by four bicycle wheels, Wright type front and Curtiss type rear controls. The surfaces have no arch.

It is claimed that this machine has flown three-quarters of a mile in a circle on its first trial, but this is extremely doubtful for many obvious reasons.

The balloon race resulting from the Pacific Aero Club's challenge to the Oakland Aero Club will be held Oct. 9, and it is probable that there will be another race during Portola week. Baldwin is completing a 40,000-ft. balloon for the Pacific Aero Club, and the Oakland Club will use the balloon "City of Oakland," P. A. Van Tassel, pilot.

A. S. Smith of Exeter, Cal., is making some long gliding flights.

Horace Walling, Jr., of San Mateo, and Elwin Willatts of San Francisco have made numerous flights with their respective gliders.

Boston's Aero Show in 1910.

It has been decided to hold the "First National Exposition of Aerial Craft" in Boston, Feb. 16 to 23, 1910. The exposition will be devoted exclusively to everything appertaining to aeronautics, and the list of gentlemen who will serve on the advisory board is in itself a guarantee of the success of the exposition.

The Mechanics Building, well adapted to this purpose, has been engaged, and the interest being manifested in New England at the present time in aerial development will be further stimulated by a show of this description.

It is desired to make this a most complete exhibit, and to that end co-operation is earnestly desired. Satisfactory arrangements as to space will be made, and all are asked to give assistance in furthering the interest in aeronautics in this section.

Spark Plug Loses Race.

In the table of contestants at Rheims, printed in the October number, the rating of one Bleriot machine was given as 50 h.p.

Unfortunately, in the story of the meet, it was not brought out that Bleriot, finding that Curtiss had the faster machine, substituted an 80-h.p. motor for the 50, and the greater powered motor was the one which he used in the last try for the single lap when he defeated Curtiss for first place.

Another item of interest which has not been heretofore made public is the fact that to the breaking of a spark plug in this single lap contest must also be attributed Mr. Curtiss' loss of first place. It is extraordinarily interesting to compare the times made by Curtiss and Bleriot with Curtiss handicapped for a quarter of the distance with a broken spark plug, and the increased horsepower in the Bleriot machine.

Another View of "Aeronautics."

"According to my views, your magazine cannot be too technical nor can there be too much about aviation. In fact, I have absolutely no criticism to offer. The contents of the magazine indicate that every effort is made to give the news in the best possible manner, and in such a way that it serves as data to those interested.

Patents.

Paul F. Degn, Bremen, Germany, No. 934,394, Sept. 14, 1909. Screw propeller for flying machine, the characteristic of which is that the blades are made up of a series of metal strips, slidably connected.

Wallace R. Turnbull, Rothesay, New Brunswick, Can., No. 934,771, Sept. 21, 1909. Aeroplane and hydroplane. The planes have double curvatures presenting a concave curvature in the front under surface, with a convex curvature on the upper front surface, while at the rear these curvatures are reversed the conversity being below and the concavity above.

De Witt C. Dorman, Minot, S. D., No. 934,717, Sept. 21, 1909. Flying machine, consisting of a plurality of propellers having blades which feather by means of gearing so that these propellers rotating on horizontal axes have a lifting action. There are various concentric shafts horizontally disposed supporting these characteristic propellers so disposed as to propel the device horizontally and vertically.

Robert Strehlau, Westend near Berlin, Germany, No. 935,130, Sept. 28, 1909. Lifting and driving propeller. Construction consists of wings capable of vertical as well as horizontal motion for the purpose of lifting and driving the frame to which they are attached. There is no rotating propeller device as usually understood by that term.

Alberto R. Malasomma, New York, N. Y., No. 935,039, Sept. 28, 1909. Flying machine embodying an aeroplane body of superposed planes, vertical and horizontal propellers, wings pivotally secured at sides and motor-driven means to operate the wings and propellers.

William H. Martin, Canton, O., No. 935,384, Sept. 28, 1909. Flying machine. An aeroplane having angular balancing planes forming a diahedral angle, a motor and reversely rotating propellers at lower part of diahedral angle combined with a rudder at the rear.

Daniel D. Wells, Jacksonville, Fla., No. 935,075, Sept. 28, 1909. Skid for aerial navigating devices, consisting of a belt guided in grooves in the runner, and pulleys at the extremities so as to reduce friction and wear on the runner.

Alfred W. Reinoehl, Phila., Pa., Oct. 5, 1909, No. 935,862. Aeroplane. In an aeroplane, the combination with four longitudinal rods, vertical transverse rods dividing the frame in three sections, canvas surrounding entire front and rear and upper half of intermediate section; rudder, motor and propellers.

Adolph E. G. Lubke, San Francisco, Cal., Oct. 5, 1909, No. 936,141. Airship. Device consists of a combination of plane and hot-air dirigible. Under a large flat plane is a gas bag, divided in compartments, with schemes for supplying heated air, changing its temperature, etc. Horizontal and vertical rudders. Motor and propellers in frame hung below bag and plane.

James Meany, Boston, Mass., Oct. 5, 1909. No. 935,766. Emergency apparatus for controlling flying machines. Means by operator, with motor control circuit, for changing the position of sustaining planes so that they may be inclined to the planes of the machine to form a diahedral angle with the outer edges of each plane uppermost with respect to the machine.

Henry Otto, Bloomington, Ill., No. 933,199. Sept. 7, 1909. Air propeller, characteristic feature of which is a rearwardly and inwardly directed flange provided on each blade at the rear face thereof, said flange increasing in width from its forward end rearwardly.

Samuel H. Gilson, Salt Lake City, Utah, assignor of one-half to Jay S. Milner, Salt Lake City, Utah, No. 933,548, Sept. 7, 1909. Aeromotor. A combination of planes, cigar-shaped envelopes, concavo-converse wings and a plurability of propellers, one behind the other, each pair of blades being one-half the length of the preceding pair and whose angle of pitch increases as the length decreases.

E. S. Partridge Discusses Aeronautics.

E. S. Partridge of Wyckoff, Church & Partridge of New York City has returned from an extended European trip.

During his absence his firm made arrangements for the handling of Herring-Curtiss aeroplanes, entering this new field as the pioneers for the selling of heavier-than-air machines in this country.

While abroad Mr. Partridge arranged for the proper representation of the new aeroplanes in Paris.

In commenting on the situation, Mr. Partridge said in part: "When the news first reached me that Mr. Wyckoff had closed arrangements with the Herring-Curtiss Co. for the handling of its aeroplanes, I at once prepared to go more thoroughly into the investigation of foreign machines than was my first intention. Both Mr. Wyckoff and I have realized for some months that the handling and selling of aeroplanes to the general public would soon be both feasible and commercially practicable.

"In comparing the Curtiss machine with those built in Europe and America, which have actually flown, I have found that it possesses decided points of superiority. Its main point of excellence is its compactness and small size.

"To demonstrate how readily the amateur can learn to operate and control his nerves in air navigation, the case of Charles F. Willard is a good example. The machine with which Mr. Curtiss made his record flights on the Mineola plains is owned by the Aeronautic Society of this city, and before Mr. Curtiss sailed for Europe, Mr. Willard, an amateur, operated the machine, in calm weather, making daily flights, after but a few trials, and is now remaining in the air longer than did Mr. Curtiss after many months of experimenting."

TEN BALLOONS IN ST. LOUIS MEET

CURTISS FLIES.

New American Duration Balloon Record.

THREE AIRSHIPS MANOEUVRE.

ST. LOUIS, Oct. 13.—Ten balloons started in the centennial celebration of this city on October 4, on record-breaking trips. Figures have not yet been officially compiled and records have not been checked up.

The standing of the balloons at present is as follows:

"St. Louis III," Sylvester von Phul and O'Reilly (St. Louis), to Mille Lacs, Minn., 550 miles, 40 hr. 40 min.

"Indiana," H. H. McGill and J. H. Schauer (Dayton, O.), to Albany, Minn., 525 miles, 40 hr. 35 min. Sailed under protest as McGill had no pilot license.

"Centennial," H. E. Honeywell and J. W. Tolland (St. Louis), to Silas, Ala., 485 miles.

"Cleveland," J. H. Wade, Jr., and A. H. Morgan (Cleveland), to Alexander City, Ala., 425 miles, 38 hr. 15 min.

"University City," John Berry and W. C. Fox (St. Louis), to Mooresville, Mo., 195 miles, 22 hr. 15 min.

"New York," Clifford B. Harmon and Augustus T. Post (New York), to Edina, Mo., 145 miles, 48 hr. 25 min. Altitude reached, 24,200 ft.

"Pommery," N. H. Arnold (North Adams) and Le Roy Taylor (New York), to Knobel, Ark., 160 miles, 28 hr. 20 min.

"Hoosier," P. M. Crume and L. E. Custer (Dayton), to Russellville, Mo., 169 miles, 21 hr. 30 min. Disqualified on account of Mr. Crume not being a pilot.

"Peoria," J. H. Bemis and G. H. Smith (Peoria), to Levings, Ill., 127 miles.

"Missouri," Harlow B. Spencer and James P. Denver (St. Louis), to Hibernia, Mo., 100 miles.

All but the "Missouri" and "Peoria," 40,000-footers, were of 78,000 capacity. In its class the "Peoria" won out for the Centennial Cup and the "St. Louis III" the $600 prize in the big division. Full details of the preparations were given in the August, September and October numbers of AERONAUTICS.

Jack Bennett and M. A. Heimann made an independent ascension from St. Louis, landing at Laredo, Mo., a distance of 206 miles.

AEROPLANE FLIGHTS.

G. H. Curtiss and G. F. Ozmont were on hand to furnish delectable flights for the aviation fans. Curtiss used the machine which he had at Governor's Island and Ozmont is a professional flier imported, together with a Farman machine, by J. W. Curzon, who enters the aeroplane exhibition business. U. A. Robinson, of St. Louis, brought out a monoplane which failed to get going.

On the 7th Curtiss made three short flights. The first two were early in the morning and the last flight did not occur till dark. Four hundred thousand people waited for hours to see the performance. Ozmont ran his machine around the ground but could not get it in the air.

The following day, late in the afternoon, Curtiss made a flight in a wind, it is stated, of 15 miles per hour. Ozmont was only able to get his front wheels off, and in making a turn damaged the machine to a considerable extent. Robinson failed to get off the ground. In the early morning he made another short flight in the presence of members of the aero club.

On the 10th Curtiss provided a return for the bad winds which blew at the time he should have flown during previous days. He completely circled the field, over the heads of the spectators, grazing the grass in a thrilling demonstration.

THE AIRSHIPS.

Three airships tried to fill the air above Forest Park, and Knabenshue made an unheralded ascent on the 6th, and on the 7th Lincoln Beachey, Captain Baldwin and Knabenshue were all in the air, and Baldwin experienced trouble after an extended sail and had to land in the crowd. After a little tinkering he went up again. On the 9th the speed race for the $1,000 had to be called off on account of darkness.

BRESCIA RESULTS

Rougier stayed at Brescia after the other prominent aviators left, and made a new height record of 645 feet on September 20. On the same day, in the presence of the King, Lieut. Calderara flew the 50 kilometers in 50 min. 50 3-5 sec. Rougier also made 20 km. in 18 min. 25 sec. Cagno, in an Avis monoplane, after flying well in several hundred meter jumps, lost control, and his aeroplane fell on another, doing considerable damage.

WINNERS.

Grand Prize of Brescia (speed over 50 kil.).—1st, Curtiss, $10,000; 2nd, Lieut. Calderara, $2,000; 3rd, Rougier, $1,000.

Modigliano Height Prize.—1st, Rougier, 198 metres, $1,000; 2nd, Curtiss, 51 metres, $600.

Passenger Carrying Prize.—Lieut. Calderara, $600.

Prize for Starting in Quickest Time.—Curtiss; 2nd, Leblanc.

Calderara also got $4,600 in other prizes and the King's Cup.

Santos Dumont on a Cross Country Flight

FOREIGN LETTER

New World's Records by Orville Wright—Aviation Meets all Over Europe—Death of Captain Ferber in Voisin Aeroplane—"Republique" Falls, Killing Four—Clement-Bayard Puts "Demoiselles" on the Market—New Aeroplane Factory in England.

Australia.

The inaugural meeting of the Aerial League of Australia was held on Aug. 16. The government is much interested in the aeronautical movement, and has offered a prize of $5,000 provided that a similar amount is publicly subscribed for the most proficient airship.

Austria.

Several military dirigibles are under construction and Herr von Luben, a wealthy manufacturer, is said to have presented to the Austrian army a Wright aeroplane which is to be available for flights at the beginning of this month.

Belgium.

EXHIBITIONS AT TOURNAI.

Beginning September 6, Paulhan in his Voisin gave exhibitions at Tournai. Bad weather prevented much flying. On the 11th he flew over the surrounding country for 1 hr. 35 min., landing five miles away, by invitation, at Taintegnies. An hour and a half later he flew back to the grounds.

OSTEND MEET.

At Ostend on September 16, Paulhan flew the entire length of the Plage and made a magnificent turn over the sea. Two days later he flew 47½ kilometers in 1 hr. 1 min. over the sea front, landing finally in the water but suffering little damage. By this flight he won a prize of $5,000. The other aviator, Bregi, made two short flights, one of 4 kilometers, which Paulhan bettered and won $1,000.

SPA AVIATION MEET—NEW STARTING RECORD.

The meeting at Spa, beginning September 21, was a veritable miniature Rheims. Among those who were entered were Sommer, Paulhan, Delagrange, Le Blanc and Cranda, a young Roumanian with a Voisin. Delagrange was the star performer and made several well executed short flights on the first day, September 22. On September 23, the ground being very rough and marshy, the short flights made by Delagrange and Sommer were preceded by great difficulties in starting. The next two days many beautiful flights were made, and the populace was extremely enthusiastic. On September 26 rain set in again but Delagrange braved it and made a short flight. On landing, however, the wheels struck in the mud and the machine tipped up, breaking both wings, in consequence of which the meet was postponed two days. The longest single flight was of 23 kilometers by Le Blanc. On the 29th Delagrange made a new record, starting in 49 meters.

Denmark.

Ever since he has piloted a Bleriot XI, Delagrange has been very active, flying all over Europe. He has been at Aarhus, in Denmark, where he made several flights before the king and queen, his best being one of 15 min. duration and at a height of 125 ft.

British Isles.

The garage the *Daily Mail* has had constructed for the Lebaudy airship is now completed. It measures 365 ft. long, 98 ft. high and 65 ft. broad, and is constructed mainly of steel girder work and iron sheeting.

$5,000 FOR 40 MILES.

The Glasgow *Daily Mail & Record* has offered $5,000 for a cross-country flight by a Scotchman in a Scotch-built aeroplane from Edinburgh to Glasgow, a distance of about 40 miles.

Harry Keen, a member of the Aeroplane Club, offers a prize of $2,500 to the first aviator who succeeds in flying over London. Another prize of $250 is offered by Chas. Friswell to the first English aviator who succeeds in remaining stationary in the air for one minute at a height of at least 50 ft. This would seem to point to some encouragement for the Helicopter "fans."

Cody has done so well that he is taking out naturalization papers, and has already put an English engine in his machine so that he can go in for the English prizes, and just now is the only man in England who is making any real flights, as "flights" as we knew them last year are now nothing but hops.

After his record flight of over one hour last month, he has contented himself during the month with making short flights, lifting many passengers in the air for a few moments.

New aero clubs have been formed at Coventry, Manchester, and Liverpool, as well as in other cities, and many experimentors are building full-sized machines.

Several leaders in the automobile are turning their attention to the commercial side of the aeroplane, notably the Sheffield Simplex Co., which has purchased a Bleriot monoplane. Two other "Bleriot XI" type machines have been purchased by private parties.

It has been definitely decided to hold an aviation week at Blackpool from October 8 to 14. Farman, Delagrange, Paulhan and some Wright machines have been entered. The prizes will total $65,000.

Mr. Haldane, the minister of war, discussed Aeronautics in Parliament and expressed his opinion that dirigibles were better at present for warfare than aeroplanes. He said that the Admiralty were now constructing a large dirigible of the Zeppelin type which was to be completed some time in the spring of 1910. He also stated that in a short while England would have three large dirigible cruisers and that the government is about to purchase two aeroplanes.

The new Barnwell machine (described in last issue) had another trial on September 8. It ran off the starting rail and was damaged. On the next day, however, shortly after it rose in the air, the aviator made a false movement crashed down to the ground and the machine was severely damaged.

BALDWIN AND MCCURDY ENTER $5,000 CONTEST.

The *Daily Mail* has a dozen entries for the $5,000 circular mile prize for British-built and flown machines. Among the entrants are J. A. D. McCurdy and F. W. Baldwin, of Baldeck, comprising the Canadian Aerodrome Co.

BLERIOT MACHINES TO BE MADE IN ENGLAND.

The famous Humber concern has arranged to build fifty Bleriot monoplanes to sell at $2,000. Voisin and Farman machines will also be arranged for.

Moore-Brabazon, who, we remember, was the first man in England to fly, with a Voisin machine, now has his British-built machine of Short Bros., and with a heavy automobile engine has been able to easily fly a mile at a time. A lighter engine will be fitted.

France.

The Marquis de Dion has asked the Automobile Club of France to give $40,000 for a Grand Aviation Prize.

Bleriot has sold in all 103 monoplanes. As soon as these are delivered, he will go for the London-Manchester prize, for which he is building a special machine.

The ranks of the fliers and would-fliers are being constantly augmented, and Ruchonnet, who learned in four days, has been able to make a 10-min. flight at Chalons the early part of September. Chalons camp has seen many flights during the month by pupils of Farman and Voisin. Bregi, after a few lessons in the Voisin, was able to make seven circuits of the field before going to Ostend for exhibitions.

Farman and Latham were out practicing for the Berlin meet.

Farman and Voisin have sold many machines, and the French aeroplane industry is bristling with activity.

A. Mortimer Singer, the English ballooner who has purchased a Voisin machine, has been continuing flights at Chalons. He got caught in a squall and damaged the aeroplane.

A three days' meeting is to be held at Issy on October 30, 31 and November 1. Many aviators are to take part.

The Koechlin monoplane began trials at Issy the first of September, and was able to make 400 meters! damaged against fence in landing.

Guyot, the winner of the last "Coupes des Voiturettes" at Dieppe, is turning to aviation and is experimenting at Tours with a Bleriot monoplane. After he has mastered his machine, he intends to tour Russia, giving exhibition flights.

Jacquelin, the ex-racing cyclist, is making trials at St. Nazaire with a monoplane of his own design with a Dutheil-Chalmers motor.

Maurice Farman, the brother of the holder of the world's record, made a splendid cross-country flight lasting 15 min. in his R. E. P. biplane on September 24. The distance he covered was about 15 km. over Buc and Chateaufort.

At Nancy, Schreck on his Wright machine made a good quarter-hour flight. Schreck has fitted three small wheels with springs to the skids of his Wright, and finds starting much easier and very satisfactory.

A newcomer at Juvisy is the biplane of Maurice Clement, very much on the style of Voisin, and built at the Clement-Bayard works. Details are: spread, 11.6 m.; surface, 60 m.; over all length, 11.5 m.; 40 h.p., 105 kg. Clement-Bayard motor, total weight, with operator, 500 kg. Wing tips are used for lateral balance.

SANTOS DUMONT IN WONDERFUL FLIGHT.

Santos Dumont has done little flying since early summer. On September 13 he won a bet made with M. Guffroy some time ago as to who would be the first to pay the other a visit by aeroplane. He left St. Cyr in his little "Demoiselle" and covered the distance to Bus in about five minutes at a speed of nearly 60 miles an hour. The following day he flew back.

He made a new record for getting off the ground. The French club officially measured his running start as 70 meters in 6 1/5 sec., beating Curtiss' record of 80 meters.

He has demonstrated the good features of his tiny aeroplane by putting a weight of about 40 lbs. on one side of the frame, making it out of balance, but in spite of this the machine kept on an even keel, maintaining it also when the weight was suddenly released. He also was able to take his hands off the control during flight.

The Clement-Bayard firm has made arrangements to build 200 monoplanes of the "Demoiselle" type to be sold at $1,500, and aeroplanes are dropping in price faster than the motor cars did.

On September 17 Santos Dumont left his garage at St. Cyr for a flight over the surrounding country. The motor began misfiring after some time and he decided to land. It happened to be near a Chateau at Wideville, 18 kiloms. in 16 minutes. On the previous day he had made two trips to Buc and back.

NANCY EXHIBITIONS.

Sommer on his Farman made a remarkably interesting flight on September 11 at Nancy, where he went to give exhibitions. He flew 12 miles across country from his aerodrome to a parade ground where a military review was being held. He landed on the field amid wild cheering from the soldiers. On rising again he passed along the line as though reviewing them and then flew back at top speed to Nancy. During the aviation week there, ending on the 12th of September, he made several shorter flights and took up a number of passengers.

DEATH OF CAPTAIN FERBER.

Another martyr to the cause of aviation. Captain Ferber, like whom there were few more whole heartedly devoted to the subject in France, and whose writings form an instructive and valuable addition to the meagre literature on aeronautics, was tragically killed at the Boulogne aviation meeting on September 22. Count Lambert had been flying the week before the meet, but suddenly returned to Paris, leaving only Ferber.

On September 15 Ferber, leaving the trial ground, flew across country for five miles, and after circling over the beach returned to his aerodrome.

The next day he made a bad landing after a short flight. On September 20 and 21 he made a number of good flights. Then on September 22, due probably more to his unfortunate deformity of being very near-sighted, he went head on into an obstructive hillock, wrecked his machine and was crushed to death.

The "flying fortnight" at Juvisy is to last from October 3 to October 17, the first week to be devoted merely to practice.

There are 30 entries and the prizes total around $40,000. On October 10, the first good day of the meet, over 400,000 persons came out from Paris. Count Lambert made some good flights. The train service was so wretched that rioting and a general smashing up followed.

The new "Liberte" in the beginning of September made several excellent trips about Moisson, showing perfect stability and control.

The "Clement-Bayard" has been repaired and shipped to Russia since its recent fall into the Seine.

On September 13 the "Republique" was again in service after the trouble with the motor at Nevers, and took part again in the military maneuvers at La Pallisse.

"REPUBLIQUE" DESTROYED—FOUR MEN KILLED.

After the conclusion of the maneuvers the airship started on the way back to Chalais-Meudon, with Captain Marchal Lieut. Chaure and two mechanics on board. Near Avrilly one propeller broke and the blade tore through the envelope. The gas escaped rapidly and the aerial vessel fell to the earth, the awful shock killing the entire crew. Immediately the Lebaudy Brothers offered to present another one to the Government, a matter of forty or fifty thousand dollars. On September 28, amid highest military honors, the unfortunate victims were buried.

On September 26 the start of the annual race of the French Aero Club was held in the Tuileries Gardens at Paris, 30 balloons in all taking part.

The weather was doubtfully cloudy, and the start was delayed. The balloons finally were sent off at one-minute intervals. There were no accidents, the quality of gas was good, and everything ran with great smoothness. Most of the contestants were caused to descend prematurely by the proximity of the Mediterranean. The winner was Georges Blanchet in the balloon "Genevieve," 1,600 m. capacity, accompanied by M. Pierson. He landed at Port-Saint-Louis on the Rhone, 3 km. from the Mediterranean and 620 km. as the bird flies from Paris.

Germany.

WRIGHT MAKES NEW HEIGHT AND PASSENGER RECORDS.

Orville Wright's flights at Berlin have attracted much attention especially as he has been steadily raising the altitude record. On the 11th of September he flew for 42 min. On September 15 Wright took a trip on board the "Zeppelin III" from Berlin to Mannheim. On the 16th he flew for 55 min. before the Empress, and attained a height of 220 meters, making a new world's record. Two days later he made a passenger record, remaining up for 1 hr. 35 min. and 47 sec. with Captain Engelhardt. The same day Wright was up for 1 hr. 45 min. On Oct. 2 he took up the Crown Prince on a 10 min. flight. Then Wright went up alone to an estimated height of 1,600 ft.

Herr Grade, the German aviator, in his own machine, which resembles closely the "Demoiselle," has succeeded in making several short flights at the Mars field near Berlin. On September 18 he flew a distance of 5 km. and landed without accident near his starting point. In trying for the $10,000 Lanz prize, the propeller broke in mid-air and the machine was somewhat damaged.

BERLIN AVIATION MEET.

The aviation races at Berlin from September 26 to October 3 livened things up a bit, as they gave the stoic Germans a chance to see such experts as Latham, Farman and Rougier.

On September 27, the second day of the races, Latham, with his accustomed skill and daring, flew, in a 24-mile wind, from the Tempelhof Field, flying directly over a thinly populated part of the city of Berlin, and return, a distance of about 10 km. in 7 min. This is the first flight of this character.

The next day many flights were made. The best was that of Rougier, who flew 44.75 km. in 52 min.

The next day did not pass without its little accidents. It was one of activity, as well. Bleriot left in spite of an agreement to fly on five days and had been paid $5,000, so the promoters seized his machine. Rougier made 31 rounds of the course, covering 77½ km. in 1 hr. 37 min., with Latham next with 67½ in 1 hr. 14 min. In the practice flights of the preceding week, Latham stayed up for 1 hr. 3 min.

Although some interesting flights took place on the last day, October 3, they did not affect the final results. Farman flew two hours and Rougier made several ascensions for height.

During the meet the Aviation Company seized the aeroplane of Besa and Edwards, the Chilian aviators, alleging failure to fulfill contracts.

On October 3 Latham attempted to beat Rougier's height record made the day before of 560 ft., going to an estimated height of 600 ft. or more, but it was not official.

The results of the competitions as announced by the officials are:

Long distance contest, $10,000 and City of Berlin Cup, won by Rougier, 120 kilometres (74½ miles); Latham second, $3,750, 82½ kilometres (51 1/3 miles); Farman third, $1,250, 65 kilometres (40 miles).

Durability contest, won by Rougier, 2 hr. 38 min. 18 2/5 sec.; Farman second, 1 hr. 31 min. 18 3/5 sec.; Latham third, 1 hr. 21 min. 42 3/5 sec.

Speed event, 20 kilometres, won by Latham, $3,250; time, 18 min., 46 4/5 sec.; Farman second, $500; time, 20 min. 9 2/5 sec.; Baron de Caters, third; time, 22 min. 17 sec.

Height prize, won by Rougier, $2,500, 560 ft.; Latham second, $1,250, 327 ft.

No prize was awarded in the durability competition, as no competitor stayed in the air longer than Rougier, the winner of the distance prize.

Neither was the prize of $2,500 for the passenger-carrying contest awarded, as Rougier alone fulfilled the conditions.

The new airship built to the designs of Professor Schutte will be ready to make its trial trip within a few days' time. The dirigible is 423 ft. long and about 60 ft. in diameter. The frame is not, as in the case of the Zeppelin airship, of aluminum, but of light veneered wood, all metal portions being of hard wrought steel. Four propellers will be driven by as many motors, each capable of developing 135 h.p. It is anticipated that an average speed of twenty-five to thirty miles per hour will be attained. The airship will be capable of carrying a crew of thirty men.

The "Gross II" took part in army maneuvers as an adjunct to the "Blue" army. On September 13 it rose from its encampment, but was soon lost to view. During the evening news reached the "Red" headquarters that the airship had accidentally become caught in a tree and they went out and captured it. This temporarily ended the career of the Gross, but a few days later the airship was given back to the "Blues" by the "Reds," and on the 15th of September did some very valuable scouting service. In fact it is claimed that the victory of the Blue army was largely due to the information obtained by the dirigible. Throughout the maneuvers the wireless telegraph outfit of the airship was thoroughly tested.

At the Frankfort exhibition, small trips have been made by the Parseval, the Clouth and a new semi-rigid aeronaut named the "Ruthenberg," which has made satisfactory evolutions.

The new airship of the Rhenish and Westphalis Co. is expected shortly. It is 2,900 c. m. volume semi-rigid, divided into compartments and driven by a 110-h.p. motor.

On September 14 the "Parseval III" made a splendid trip from the Frankfort exposition grounds to Mainz, where it landed. It then went on to Wiesbaden, maneuvered over the place and returned to its starting point.

The little Clouth dirigible made an excellent flight from Frankfort to Kronberg, the palace of the Kaiser's mother, and back on the 22d.

On September 27 the "Parseval" was once more out. This time it stayed up five hours, traveling from Frankfort over Howburg and Darmstadt to Mannheim and return.

The "Zeppelin" has been making long trips, but in these days very little notice is taken of them. At Friedrichshafen on September 10, Count Zeppelin took the King of Saxony aboard for two trips. Wireless telegraphy was used successfully.

At Breslan the local aero club has had constructed several gliders of the same type and shape at Lilienthal's, with the exception that movable rudders are attached and the aviator is seated. Good flights have been made.

Carl Gatho, with his 54 m. 36-h.p. biplane, has been making short flights near Hanover.

Italy.

The Italian military dirigible has been given a thorough try-out. On September 16 it underwent a long and severe trial. On the next day it made a run of 50 km. at 860 m. ht., and throughout has exhibited remarkable stability and high speed. Capt. Riccaldoni has submitted his report on the performances of this airship. It has been in commission two months, has made 16 ascents, one of them lasting five hours and covering 240 km. The total distance traveled by the airship is 1,280 km., all on a single inflation.

Russia.

On Aug. 24, at Odessa, M. Cotrones, of the Odessa Aero Club, made a good flight of 18 min. in a Voisin biplane. Unfortunately the landing was a little hard and parts of the machine were broken.

Two of the Russian military dirigibles sailed over St. Petersburg on September 28 and were acclaimed by the populace. The Government has also begun a series of trials with the military biplane, very much resembling the Wright machine.

Chairs of Aviation have been founded at the Polytechnical Institutes of St. Petersburg, Warsaw, Kieff and Rostoff, and it appears as if Russia intended to keep well up with the rapid progress in aeronautics.

On September 17, Legagneux, in his Voisin, made several flights at Warsaw amid the enthusiasm of thousands of people.

Spain.

The Spanish Government is having a dirigible, the "Espana," built at Beauval, in France. On September 15 it met with an accident as it was about to be tried.

The Aero Club of Catalonia has just been formed at Barcelona with the Marquis of Mariona as President. King Alfonso has given a prize and next year an international aviation meet will be held in Spain.

Sweden.

Folmer Hansen, aviator, intended a few weeks ago to cross over from Sweden to Denmark. He started out twice, and the second time fell into the water but was rescued immediately.

Switzerland.

At Geneva, M. Luventhal is putting the finishing touches to a new aeroplane with which trials are shortly to be commenced.

M. Bianchi, of Lugano, is also at work on a new flying machine to be fitted with a 30-h.p. engine and two propellers.

Dane Hurlburt, an American, has made several short flights in his machine, provided with two propellers, one in front and one in the rear, driven by a 25-h.p. Anzani motor. It is longer front to rear than wide.

CURTISS' RETURN TO AMERICA

ON September 22, the day after Curtiss' arrival from abroad, more than a hundred and forty attended the Aero Club of America's luncheon in his honor at the Lawyer's Club. At the guest table sat Glenn H. Curtiss, the officers of the club and their guests, L. D. Dozier, R. J. Collier, William Berri, Col. J. J. Astor, Colgate Hoyt, Judge Elbridge H. Gary, Hon. Herman A. Metz, Dr. St. Clair McKelway, George T. Wilson, Hon. Herbert Parsons and Frank N. Doubleday.

Among other diners were Marconi, Hon. James M. Beck, W. D. Gash, Clifford B. Harmon, Christopher J. Lake, Mayor Mahool, of Baltimore, Medill McCormick, James W. Osborne, A. L. Riker, General Thomas L. Watson and Payne Whitney.

After being introduced, Mr. Curtiss equaled, if he did not break, Wilbur Wright's record for brief speech. He thanked those present for his kind reception home, saying he was glad to get back to the "old U. S., but had hoped to slip in on the quiet." When asked to tell his experiences at Rheims he turned the privilege over to St. Clair McKelway and Justice O'Gorman, who saw him fly in the big meet.

Dr. McKelway told of being at Rheims, seeing the wonderful flights and claimed the honor of being the oldest aeronaut present, as he made an ascent back in 1867, in Andrews' dirigible. This airship (which was made to travel in any desired direction by means of long inclined planes between the triple, parallel, cigar-shaped gas bags, the planes causing the balloon, as it rose from the buoyancy of the gas, to ascend upon a long incline) on this occasion traveled as far as Goshen, N. Y. (50 miles), whence it was blown back by the wind across Long Island Sound to the eastern end of Long Island, where a successful landing was accomplished.

Justice O'Gorman in his remarks said, addressing Mr. Curtiss: "I wish to express to you the profound admiration which I felt on that day and have felt ever since for what you did, and I only hope in contests of the future that you will be as fortunate and successful as you were in France last month."

Mayor J. Barry Mahool, of Baltimore, who was an official delegate from the Washington and Baltimore aero clubs, availed himself of the opportunity to plead on behalf of Washington and Baltimore for the Gordon-Bennett aviation race next year. The two cities are co-operating in their efforts to advance the sport, and Mayor Mahool promised the best of the two cities for the meet and its contestants and guests. He read a telegram announcing the flight of Lincoln Beachey from that city to a point in the Blue Ridge Mountains, 125 miles away—a flight which is probably the longest ever made in America with a dirigible balloon.

The other speakers were Hon. Herman A. Metz and Colgate Hoyt. Mr. Hoyt told of being at Rockefeller's house when a dealer brought up a horse for inspection, at a price of $5,000. At that time Rockefeller was interested in racing. He objected to the price and the dealer replied: "You have been buying all your life 'going-to-be's' or 'has-beens.' Now this horse is an 'izzer.'" "I am a 'has-been,'" said Mr. Hoyt, "but we are here to-day to do honor to an 'izzer.'"

After three cheers for President Bishop, proposed by Mr. Hoyt, the luncheoners dispersed, the majority repairing to Governor's Island to see the Wright machine which was being set up. Mr. Curtiss and Mr. Wright had a friendly discussion of the aviation grounds of Europe, but no mention of any suit was made.

RECEPTION AT HAMMONDSPORT.

The real welcome to Mr. Curtiss was that accorded him by his home folks, the ones who hold him most in their hearts. It brought to mind the occasion of his winning of the "Scientific American" cup for 1908, when he was carried about on the shoulders of his admiring friends.

Mr. Curtiss is one of those humble individuals who never claim to have done anything very great, but just lets his deeds stand for what they are worth. A public demonstration for him is as embarrassing and, in a way, unenjoyable as it is sought after by some less entitled. I would like to express my appreciation here in a suitable manner, but I have been limited by the unfeeling editor, so I hope I may be pardoned.

The day after the luncheon Mr. Curtiss arrived in Bath, a junction point for Hammondsport, his home. Here he was met by two train loads of Curtiss enthusiasts, a band and a welcoming committee. Cheered by the assembled crowd, he was taken to a dinner at the local hotel by the committee of eleven, representing Bath and Hammondsport. Bath would not stand for being left out of it simply because 'she was eight miles from Hammondsport.

At 7 o'clock in the evening a special train left for his home town, where the blowing of whistles, the ringing of bells, the band, fireworks and cheers greeted the train as it pulled up. It was a difficult task to get Mr. Curtiss into the carriage and start the parade because of the onrush of those who vied with each other to be the first to clasp the hand of the victor.

I am going to avail myself of the Hammondsport *Herald* for the rest of this story, to show you how Hammondsport feels. We have not advanced too far to class Curtiss among the pioneers in actual flying, but with the march of progress, too often the good things of life are forgotten.

"Notwithstanding the continued downpour of rain and the deep mud, all the time getting deeper, a great procession was organized, and followed partially the line of march laid out. The crowds packed the streets on either side, red lights were burned and a perfect bombardment of Roman candles was maintained. One of the attractive features of the parade was a float containing about thirty girls, all in white, and a couple of little boy clowns.

"The decorations at the homes and places of business were intensified by the colored lights and the village was an imposing sight. Transparencies over all the arc lights and those carried in the procession added to the good feeling of the crowd. Behind the speakers' stand at the Curtiss works was a huge electric sign with the initials 'G. H. C.' in red, white and blue, and below, in immense letters, 'Welcome Home. The tall flagstaff was brought out with colored incandescents and strings of the lights marked the roadways. All the decorations at the works were accomplished by the employes, to whom great credit is due. In front of the speakers' stand was a miniature aeroplane, an ingenious piece of work accomplished by Claude C. Jenkins.

"Judge Wheeler, who is president of the works, made a most excellent address, which was listened to with rapt attention during a drizzling rain. He paid glowing tribute to Mr. Curtiss, his character, accomplishments at home and abroad, to Hammondsport, its people and to the magnificent outburst of enthusiasm manifested in Mr. Curtiss' homecoming. He closed by presenting Mr. Curtiss with a gold medal, the gift of the people. In accepting, Mr. Curtiss said: 'Although I spent a number of years as a student of Hammondsport high school, I never learned words which are adequate to express my appreciation of the reception I have been accorded to-night, or to express my thanks for this medal which has just been presented to me. The last four weeks have been very eventful. I have met with considerable success and have met many notable people, but on no occasion have I experienced the happiness that I do to-night as I look upon this assemblage.'

"Mr. Wheeler then presented 'Slim' Shriver, Mr. Curtiss' mechanician, with a handsome traveling bag, which brought to a close that portion of the proceedings. Although the rain continued, the people lingered to meet Mr. Curtiss, who held an impromptu reception in the offices of the works.

"The fireworks ended one of the most joyous and successful public demonstrations in the history of Hammondsport. It was a grand spectacle, but modest as compared with the real emotions of the people, which were plainly depicted on every countenance.

"No hero, ancient or modern, was ever greeted with more loyalty than was Glenn H. Curtiss on this occasion. The burning of powder and the noisy demonstrations were but the exterior evidence of the great pride the people of Hammondsport feel in him. Everybody who knows Glenn Curtiss admires him for what he has done. The people of Hammondsport love and admire him for what he is, and for what, through great trials and much adversity, he has made of himself. The ease with which he carries his honors is the most convincing proof of his worth. The distinction which apparently has come to him without much exertion, many a man has laid down his life in attempting to grasp, and he accepts it as naturally and unassumingly as a child. His attachment for the friends of his youth and for the workmen associated with him is another of the strong elements of his character. Honors do not spoil him, the flattery of great men does not turn his head. His habits are as simple and his moral character as unsullied as when he was plodding the hard and uncertain road to his first foothold in the business world."

CHANGES IN THE VOISIN TYPE

The latest model of the Voisin aeroplane presents several differences from the design which has proved so successful in the hands of Delagrange, Paulhan, Rougier, etc. A radical departure in the new machine is the removal of the elevating plane from the front to inside the box tail, while now the propeller is mounted in front instead of at the rear of the main planes. The aeroplane, which will be tested by M. Chateau, will be a Voisin production throughout, as the motor will be of a new design, for which M. Gabriel Voisin is responsible. Having a bore and stroke of 120 mm. by 140 mm., it is designed to give 48 h. p. at 1,100 revolutions per minute, and weighs 95 kilogs. with magneto, etc.

"I think it is hardly possible to improve the magazine as it is at present."—R. A. W.

"Please allow me to thank Aeronautics for information that I have put to practical use and find it has helped me to reach success with my aeroplane."—F. K.

TELL YOUR FRIENDS

THE AERO CLUB OF NEW ENGLAND

By Alfred R. Shrigley, L.L.B., Sec'y.

ON November the 20th, 1909, the Aero Club of New England will hold its third annual banquet, celebrating on that date two events, the organization of the club and the 126th anniversary of the first ascension of man in a balloon. Many men of prominence in aeronautics will attend the banquet as guests, and it is expected that important discussions with regard to plans for navigating the air by aeroplane, dirigible and balloon during the year 1910 will be discussed.

The club is in a most thriving condition and has far exceeded the expectations of its most optimistic members. This organization has now 100 members, the limit set by its by-laws, and has a large waiting list.

The two club balloons "Massachusetts" and "Boston" have done excellent work during this year, having made 53 ascensions and carried 137 passengers. The vice-president, Mr. Charles J. Glidden, has been the most active of the club's pilots, and most of the ascensions have been under his direction. Several members are now qualifying as International Pilots, among them Prof. H. H. Clayton, who was formerly connected with the Blue Hill Observatory, Mass.

On Sept. 14 the president of the club, Prof. Wm. H. Pickering, of Harvard, appointed a committee consisting of Mr. Charles J. Glidden and Mr. H. H. Clayton, to consider the advisability of purchasing a dirigible, and to report to the directors the most practical type of such an airship. Another committee was on the same day appointed to consider the purchasing of an aeroplane for the year 1910. Without doubt the Aero Club of New England will this coming season own either an aeroplane or a dirigible for the use of its members.

An **Aero Club in Memphis** is in progress of formation by E. F. Stephenson of that city. The first call resulted in but three enthusiasts, but this is not accepted as proof of failure.

The **Aeronautic Society** meetings have continued to be of live interest, with model flights each meeting.

Those who flew their models were: Mr. Dalkranian, Louis R. Adams, W. S. Romme, Dr. Wm. Greene, Wilbur R. Kimball, Wm. J. Hammer, William Morgan, Percy Pierce, A. J. Smith, J. Newton Williams and Mr. Hillenbrandt. The Romme model was a circular monoplane, open in the center like a doughnut. This flew slowly and kept perfectly stable. Every flight was of almost exactly the same length. The Dalkranian Antoinette-like model performed remarkably straight and well-sustained flights. Each part combined with every other part to secure accuracy in flight.

First and second prizes were awarded to Mr. Dalkranian. Dr. Julian P. Thomas provided an interesting half hour with a small monoplane driven by an electric motor. This was suspended from the ceiling by the wire transmitting the power.

The **Aero Club of Colorado** has now been officially organized with about 50 members.

At the election held the end of September, the following officers were elected: President, Gordon L. Wands; Vice-President, W. W. Barnett; Treasurer, C. P. Allen; Secretary, Edw. F. Dean; Recording Secretary, L. H. Allmon.

The club has been organized for the purpose of promoting and advancing aerial navigation and bringing it to a more perfect stage. Enough has already been done to convince the most skeptical that practical flight with the heavier than air machine is possible, and there remains nothing for us to do but to improve and perfect the crude means which we now have.

Other objects of the club are to make scientific studies of the existing air currents which prevail at different altitudes, and make charts which will enable us to navigate the atmosphere as the waters are navigated. The club also proposes to make balloon ascensions as a means of sport. Each member may make ascensions by registering his intentions with the secretary, and will be considered in his turn.

When a member has made the required number of trips, he will receive a pilot's license, which will enable the member to pilot a balloon any place in the world.

It is the purpose of the club to own balloons, dirigibles and aeroplanes and to enter them in contests, whether they be local or international. Many people are of the opinion that Denver would be an ideal place to hold the next international balloon race since there is plenty of distance between that point and either coast to enable the participants to break the world's distance record. Every effort will be made to have this race held in Denver, since, with the above facts in view, it is reasonable to believe that Denver would be a desirable point from which to start this race.

The **Aero Club of Baltimore** was formed at an enthusiastic meeting held September 30 at the City Hall. Col. Jerome H. Joyce was elected president; Mr. Waldo Newcomer, treasurer, and Mr. James T. O'Neill, secretary. The following directors were chosen: Mayor Mahool and Messrs. J. Albert Hughes, E. K. Pattison, Charles S. Abell and Gen. Clinton L. Riggs.

The club starts with 40 members among the prominent citizens of Baltimore. The club will ask for affiliation with the Aero Club of America and prosecute, in co-operation with the Aero Club of Washington, plans looking to the holding of the Bennett aviation race next year at College Park, Md.

New Club in Washington.

WASHINGTON, October 12.—Aeroplane builders and aviation enthusiasts of Washington met at the Y. M. C. A. last evening and organized the Washington Aero-Scientific Club. There were present nine aeronauts who have built or are building aeroplanes or dirigible balloons, besides others who are interested in the science.

Temporary officers were elected as follows: President, E. H. Young; first vice-president, William H. Beck; second vice-president, T. H. Bean; secretary-treasurer, F. L. Rice. Samuel A. Luttrell was chosen chairman of the committee on experiments, and J. J. O'Brien chairman of the committee on meetings. A tentative constitution and by-laws were adopted. It was decided to call the new organization the Washington Aero-Scientific Club.

M. J. Jones, educational director of the Y. M. C. A., announced that Lieut. F. P. Lahm, chief of the aeronautical division of the United States Signal Corps, has agreed to deliver a series of lectures on aeronautical subjects to the club this winter, and will also give some practical instruction to the members in the management of aeroplanes and dirigible balloons. The lectures probably will begin next month, and will be delivered in the large assembly hall of the Y. M. C. A.

It was announced that a large field near Washington would be secured for practical experiments, and it is probable that the War Department will be asked to allow the club the use of the aviation field at College Park for experimental purposes. Signal Corps officers, in view of the interest that the War Department is now taking in aeronautics, are said to favor allowing the club the use of the College Park grounds.

Meetings will be held every two weeks, as soon as the club is permanently organized. The next meeting will be called by the temporary president within the next three weeks. It will be held at the Y. M. C. A.

Letters of regret at their inability to be present were read from several aeronauts, and a few applied for membership in the new organization by letter.

BIGGEST AERO SHOW

The Aeronautic Salon was opened on Sept. 25 by President Fallieres. All actual flying apparatus are exhibited, the Bleriot, Santos Dumont and Pelterie monos, the Farman, Wright, Voisin, etc., biplanes. There is also a large exhibit of motors, including the Renault, Gnome, Antoinette, Panhard, Clement and Pipe. In addition there are to be seen some sphericals, the Zodiac dirigible, the historic balloon Volta, which escaped from Paris during the siege, as well as a large amount of accessories and appurtenances.

In all cases considerable thought has been given to methods of alighting. Whilst the pneumatically tired wheels are retained, elastic and spring suspensions have been added and additional springs are brought into action according to the force of the descent. In one or two instances wooden skids come into secondary contact to prevent deformation or breakage of wheels, the skids being connected to springs.

Propellers have received renewed attention since the accident to the "Republique." Metal propellers are in disfavor, even for aeroplanes. Wooden propellers, although admittedly less efficient, weight for weight, are all formed of the best hard wood, generally of strips running at 90 deg. to the axle shaft. Thus it would be difficult for one of the blades to break off in the air. One firm claims for its wooden propeller, formed in one single piece of wood, that it will turn at the peripheral speed of 200 metres per minute, without any deformation or vibration.

With regard to the motors, air-cooling has been adopted in quite a number of cases. It is somewhat curious to note that French makers were quite sceptical regarding the possibilities of an efficient air-cooled engine for motor-car service. The needs of aerial motors have, however, broken down the prejudice which existed, notwithstanding the fact that the aerial service demands harder continuous work from the motor than practical road work does from the ordinary motor-car engine. The Panhard Company, however, do not recommend the air-cooled motor. They show several groups of four vertically-arranged cylinders, the carburetor being placed over the heads of the cylinders as is also the magneto.

EXCHANGE

Aero Forum and Market Place.

IN THE last issue we inaugurated a new department, called "Exchange."

Progress in aeronautics would be materially assisted if those interested could and would gather together, discuss their ideas, hold model contests, form clubs and bring organized endeavor and influence to bear on the popularization of this new sport and science and the encouragement of it through education and governmental co-operation. For one thing, strong pressure should be put upon Congress to appropriate ample sums for the carrying on of experiments, and the purchase and operation of airships and flying machines.

With the rapidly increasing realization of what aerial locomotion means, there must be few large cities in America where there are not 20 or 30 enthusiasts. These should get together, and those who are willing to meet others with a view to mutual profit and co-operation are asked to write a post card to "Aeronautics," 1777 Broadway, New York, and we will do our best to put them in touch with others. We would like to see a club in every large city.

We will print in this new department all such requests. If you know of anyone interested, won't you give us his name, and we will do our part.

If you have a suggestion which you think will aid a constructor of a machine, write it out for printing in this mutual aid forum.

If you have a new idea for a flyer, describe it briefly and send it in. If you have invented a new device, part, attachment or complete machine, give us a concise description of it. In this way you may interest capital in your plans.

If you have money to invest in aerial apparatus, let us know it and we will print a note with whatever conditions you may wish to impose. If you do not desire your name used, please so state in your communication.

If you have suggestions as to the part the government ought to take, if you want any information, or have it to give, let "Exchange" be the medium.

The idea in this department is to bring together every force which will make for advancement. We want to make "Exchange" an aeronautical forum and market place.

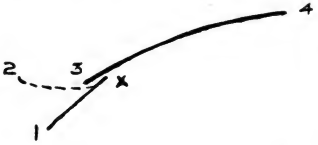
Let us have your help to keep this of ever-increasing benefit to all.

SOARING POWER VS. MOTOR-POWER.

To explain why soaring power does increase the motor-power is the object of this article, as many cannot understand this difficult problem.

In drawing 3-4 is the side view of one aeroplane and 1-X is an attached soaring blade at rest. The forward motion created by motor power does bend the soaring blades to line 2-X.

On 3-X the soaring blades are attached to the aeroplane. The motor-power it takes to bend the soaring blades to a curvature on one end, the same power it retards on the other end in forward motion.



Solution: Take a flexible stick between the two forefingers and press same to a curved line, and if you release one finger snaplike quick, the stick will shoot forward at the rate of the pressure of either finger.

The soaring blades act in the same way, just as in a soaring bird of heavy weight. After a full forward motion is gained and the blades are curved and strong enough to suit the weight of the machine and the motor-power is cut off, the aeroplane will keep on flying until the angle is changed to an upward position where the headway resistance overpowers the soaring power, the aeroplane is slowing down, and with this the soaring power.

R. DRESSLER.
Coney Island, N. Y.

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now with large machinery manufacturer would like to form connection with well established airship builder. Experience in important executive positions; an expert on result bringing letters, well equipped by education, experience and personality to handle high class business. Widely traveled at home and abroad. Age 33, unmarried. Manager, Room 338, 160 Adams St., Chicago, Ill.

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E. F. Stephenson, 250 Vance Ave., Memphis, Tenn., offers to furnish readers with small brass turnbuckles at cost, 21½ cents each, or $2.50 a dozen.

WILL SOMEONE PLEASE ANSWER?

To the Editor:

Has anyone ever experimented on the spiral propeller? Would it not act about the same as the continuous paddle on a boat?

ANONYMOUS.

PRIZES FOR LOWEST SPEED.

A suggestion is received from a subscriber in regard to the offering of prizes. Attention is called to the various prizes offered abroad and

(Continued on page 205)

ASCENSIONS

[NOTE.—The first name given is that of the pilot.]

WAR FROM A BALLOON.

TAUNTON, Aug. 19.—Wm. Van Sleet, A. B Reed and John J. Kenney, in Dr. Randall's "Greylock," viewed the war game from above, reporting for their newspapers a battle between the Reds and the Blues. The landing was in front of a flagged railroad train at East Freetown, Mass. Dur., 1 hr. 18 min. Subsequently the balloon broke away and was not found till Sept. 28, in New York State.

DAYTON, Aug. 24.—Capt. G. L. Bumbaugh and seven guests went up in the "Hoosier," landing at New Moorefield, near Springfield, O. In the evening Capt. Bumbaugh lectured before the Aeroplane Club on "Judging Distances from a Balloon."

DAYTON, Aug. 24.—H H. McGill, Paul Keenan and Earl White in the "Dayton," to between Springfield and Enon, O.

NORTH ADAMS, Aug. 26.—N. H. Arnold, Wm. R. Cross, and D. W. Goodrich in the "No. Adams No. 1." No wind. Balloon circled city, landing finally on Florida mountain nearby.

FITCHBURG, Sept. 1.—H. H. Clayton, J. Walter Flagg and Jay B. Benton in the "Boston," to Winchester.

ST. CLOUD, France, Sept. 2.—E. W. Mix, G. H. Curtiss and C. F. Bishop made a short ascent from the Aero Club's grounds.

20-HOUR TRIP.

CANTON, Sept. 2-3.—J. H. Wade, Jr., and A. H. Morgan, in the "Cleveland," to Karthaus, Pa., 200 miles from Canton, after 18 hours in the air. 59 sacks of ballast were carried. This is the longest ascent ever made from Canton.

DAYTON, Sept. 3.—A. Leo Stevens, E. B. Weston and Ralph De Voe, on the first trip of Mr. Weston's new balloon "Delight," named after his daughter. The landing was at Somerset, Ky., 185 miles. Dur., 8 hrs.

NORTH ADAMS, Sept. 3.—N. H. Arnold, Clifford B. Harmon, Mr. and Mrs. Walter E. Maynard and Mrs. Thos. Hastings, to North Easton, Mass.

WASHINGTON, Sept. 3.—Lieut. F. P. Lahm, in the "Signal Corps No. 12," to Brooklyn, Md.; dur. 3 hrs. 20 min.; dist., 27 miles.

"SKY PILOT" AND "OHIO" RACE.

CANTON, Sept. 6.—J. H. Wade, Jr., A. H. Morgan and H. C. Gammeter, in the "Sky Pilot," to Palmyra, O., a dist. of 35 miles.

Dr. H. W. Thompson, Louis Brush and Ralph Dow in the "Ohio," to near Alliance, O., a dist. of 20 miles.

FITCHBURG, Sept. 8.—H. H. Clayton, J. Walter Flagg and Jay B. Benton, in the "Boston," to Ashby, 10 miles.

LOWELL, Sept. 9.—Chas. J. Glidden and George W. Brown, Mayor of Lowell, in the "Boston." Dur., 2 hrs.; dist., 10 miles.

WASHINGTON, Sept. 9.—Lieut. F. P. Lahm and Lieut. F. E Humphreys, on an instruction ascent in the "Signal Corps No. 11," to Woodbine, Md. Dist 38 m.; dur., 3:48.

WORCESTER, MASS., Sept. 9.—Geo. L. Tomlinson and Karl Symons in a hydrogen balloon of 12,000 ft., to Greenwich, Mass.

CANTON, Sept. 9.—Dr. H. W. Thompson, Dr. M. D. Bush, and V. A. Miller, in the "Ohio," to Kent, O Dur. 2 hr. 20 min.

CANTON, Sept. 11.—Dr. H. W. Thompson, Wm. Arnold and Oscar Lodius in the "Ohio," to Canal Dover, O., 30 miles.

PITTSFIELD, Sept. 13.—Clifford B. Harmon, alone in the "Pittsfield."

FITCHBURG, Sept. 13.—Chas. J. Glidden and Wm. E. Metzger, president of the Aero Club of Michigan, in the "Boston." to Pelham, N. H. Dur. 2 hr. 36 min., dist. 36 miles.

FITCHBURG, Sept. 15.—Chas. J. Glidden and P. Chester Thompson, in the "Boston," to So. Lyndeboro, N. H. Dist. 22 miles, dur. 2 hr. 44 min. Met clouds at 4,200 ft. Stayed above 1 hr. This trip celebrated the second anniversary of Mr. Glidden's first ascension.

PITTSFIELD, Sept. 16.—Chas. J. Glidden, Jay B. Benton and J. J. Van Valkenburgh, in the "Mass.," to Plainfield, Mass. Dist. 22 m., dur. 1 hr. 25 min. In fog all the time.

PITTSFIELD, Sept. 18.—Leroy M. Taylor, W. J. Serdenburg, and Mrs. A. M. King were passengers in the "Mass." on a sail to Chapinville, Ct. Dist. 38 miles.

FITCHBURG, Sept. 18.—Chas. J. Glidden, Jay B. Benton and Phillip J. FitzGerald, 8 years of age, in the "Boston," to Auburn, Mass. Distance 30 miles, dur. 2 hr. 15 min.

ST. LOUIS, Sept. 19.—John Berry and G. C. Schwartz in the "Univ. City," in an endeavor to win the Lahm Cup.

FITCHBURG, Sept. 21.—Chas. J. Glidden, H. H. Clayton and J. Walter Flagg, in the "Boston," to Mason, N. H. Dist. 15 miles, dur. 50 min.

NORTH ADAMS, Sept. 25.—N. H. Arnold, Norman Trince, Mrs. H. B. Heustis and Mrs. Arnold, in the "All America," to Goshen, Ct., 50 miles.

CANTON, Sept. 28.—Lieut. Frank P. Lahm, W. R. Timken and Jos. M. Blake, in the "Ohio," to Brownsdale, W. Va. The villagers were not very expert balloon handlers, and the landing was made in a tree. The two passengers climbed down to the ground, and finally the balloon was released, but Lieut. Lahm had to climb up the tree to get some of the belongings left behind.

NEW YORK, Sept. 29.—A. Leo Stevens and Dr. Lucas, in the "Stevens 24," to Hicksville, L. I.

LOS ANGELES, Sept. 29.—Geo. B. Harrison, Corporal Vance Worden, and Private W. A. Hall, in the "America," on official ascent of the Calif. Nat. Guard. Dist. 20 miles.

FITCHBURG, Sept. 30.—H. H. Clayton, alone in the "Boston," to Kensington, N. H. Dist. 55 miles.

PHILADELPHIA, Oct. 2.—Dr. Thos. E. Eldridge, Dr. Geo. H. Simmerman, A. C. Howard, C. D. Shaw, Bert Bartholomew and a reporter, in the "Phila. II," to Cologne, N. J.

NORTH ADAMS, Oct. 3.—Wm. Van Sleet, Waldo Johnstone and E. E. Merriam in the "Springfield," to Willimantic, Ct. Dur. 4½ hr., dist. 77 miles.

ST. LOUIS, Oct. 4.—Ten balloons left in the race of the Aero Club of St. Louis. (See special story.)

"I think Aeronautics covers everything of interest in the aeronautic world, and is one of the best magazines of its kind."—J. H. W.

"I would like to praise Aeronautics through its editor for its noble work, which no doubt has improved to the delight of its subscribers, and those who perchance come across a stray copy."—R. P. D.

"Am much pleased with the magazine,—think it embraces and sums up nearly everything known and interesting in aeronautics. Have read it with a great deal of interest and profit."—W. D. LeF.

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THE ADAMS COMPANY
DUBUQUE, IOWA, U.S.A.

the Denver *Post* prize in this country, which calls for awards based on the greatest speed attained. Inasmuch as there are more difficulties presented in the building of a slow speed machine, it certainly would be an aid to the Art if someone would offer a prize for flights accomplished at certain low speeds; say, for instance, 18 to 25 miles per hour, such prize to be increased with the diminution of speed. Of course, we do not expect that the Art will be favored with any such prize, as any money available is sadly needed for Polar expeditions. But for the purpose of an argument, we present this suggestion to those most interested.

L. W. Bonney, Upper Sandusky, O., is anxious to communicate with parts and propeller manufacturers.

Editor, Exchange Dept.,
Dear Sir,—I desire to communicate with manufacturers of motors, bamboo, aluminum tubing, and

(Continued on next page)

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Springfield, Tenn.

To the Editor.

I have in course of construction a biplane somewhat like the Curtiss machine in looks, but the mechanical make-up is entirely different, in that I have an automatic stabilizing attachment and an automatic controlling device for the two auxiliary planes. I also have a starting device which will enable one man to get the machine in the air with the utmost ease and safety without the use of weights, monorail or long runs.

The above results are obtained through a very simple arrangement properly applied. I shall be ready to place a motor on the machine in about 60 days, and being without necessary capital I desire to be placed in touch with someone who has the means, and would become interested in a machine of merit.

L. B. 233, Springfield, Tenn.

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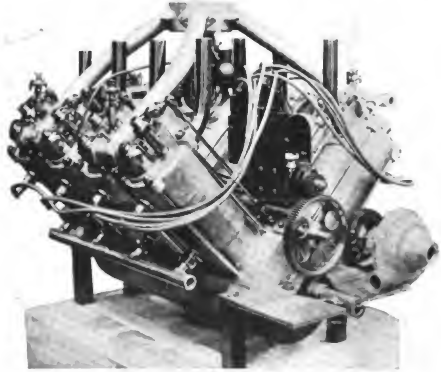

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AERONAUTICS

THE AMERICAN MAGAZINE OF AERIAL LOCOMOTION

VOL. 5
NO. 6

DECEMBER '09

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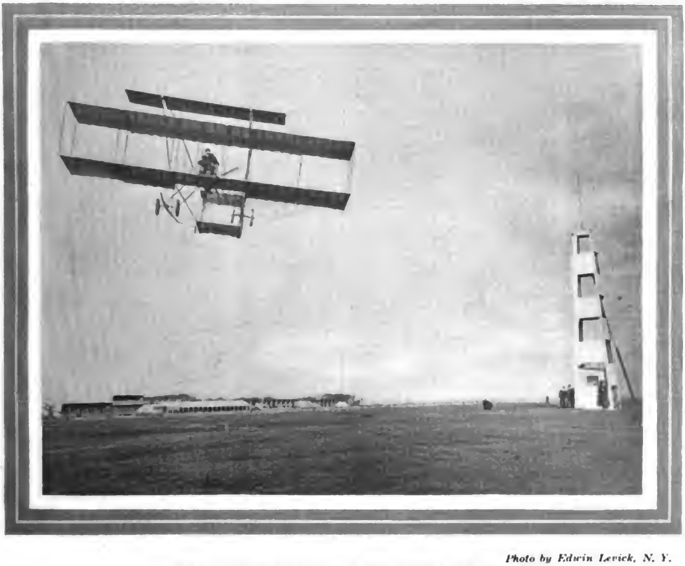

Photo by Edwin Levick, N. Y.

HENRY FARMAN FLYING AT BLACKPOOL MEET

A Notable Triumph for the Eisemann Magneto!

On October 18th, 1909, Count de Lambert, in a Wright aeroplane, using an EISEMANN MAGNETO, made a flight that startled the world—one of the most sensationally successful of any thus far. Ascending at Port Aviation, Juvisy, his biplane flew straight to Paris, over the city, and around the Eiffel Tower, attaining a height of 1,300 feet. After circling the Tower, Count de Lambert steered straight for Juvisy, landing within a few feet of his starting place, after covering 31 miles in 49 minutes, 39 2-5 seconds.

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On the contrary, they are the result of careful observations and searching study, combined with thorough knowledge of the tire requirements of the present day heavier-than-air machine.

Even the fabric is specially made of the very lightest thread.

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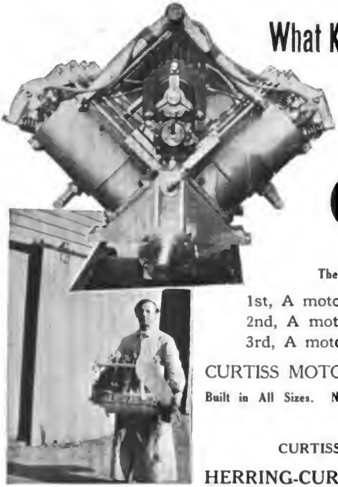

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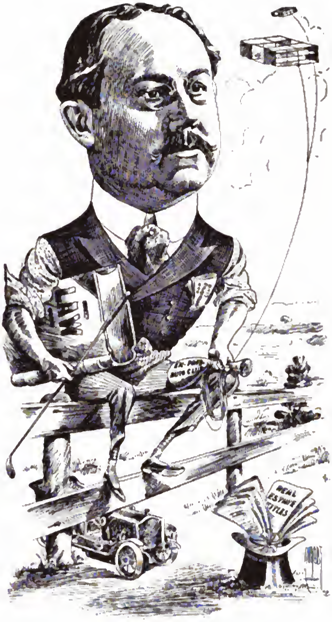

GEORGE B. CHAMBERLIN

Once chosen president by all
  The members A. C. A.
He has a very winning glance
  You know it right away.
Although the world considers him
  A shining legal light,
He likes a little boyish fun,
  And so he flies a kite.

The kite is very, very big,
  So big that it will bear
A man upon its many wings
  And lift him in the air;
Some days he means to take a trip
  Among the silver stars,
And find who has the title-deeds
  To Jupiter and Mars.

AERONAUTICS

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VOL. 5 DECEMBER 1909 No. 6

AERONAUTICS is issued on the 20th of each month. It furnishes the latest and most authoritative information on all matters relating to Aeronautics.

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LIFE INSURANCE AND FLYING

A new illustration of modern damfoolishness is contained in the notice of the Travelers Insurance Co. This matter was discussed some time ago in this journal and at that an attempt was made to argue the subject with insurance companies, to no avail. The Company's instructions say:

"The hazard of operating or riding in aeroplanes and flying-machines is not insurable as an accident risk, and those insured with us indulging in this form of sport must be asked to carry their own risk by the execution of a special waiver, or surrender of their policies. The same instruction applies to those who indulge frequently in ballooning. Please be governed accordingly, using the attached form of waiver, or terminate the insurance.

"Concerning those who take one balloon trip, with no expectation of repeating the experience, we will not require waiver for that trip, but if another one or more are to be made, the waiver must be executed, or the policy canceled."

It is comforting to see that at least the Buffalo *Times* realizes the situation, even if they do write a little amateurish:

"This is the first time where any insurance corporation has formally recognized that aerial navigation is a proposition which must be reckoned with in the insurance business. The action of the Hartford company will be followed by similar measures on the part of other concerns, and the matter is one of importance to all policy-holders, in view of the fact that with improvement in airships the number of those who ride in them is bound to increase, and the trips anigh the clouds which now make one of the big topics of news will soon become commonplaces.

"The step taken by the Travelers' Company is also of significance as tending to show the status of aerial travel in the estimate of the business world. An invention which compels a great insurance company to modify its policies assuredly cannot be treated as a mere curiosity or toy. It is clear that the Hartford corporation believes that while sky-riding is not as yet a commercial proposition, it has at least the rank of a sport, and one which is being carried on to such an extent that insurance companies must take it into account in their calculations.

"Perhaps the most remarkable thing about it all is that the company will carry risks for a single balloon ride. That is conceding a good deal, considering the peril of any sky voyage and the circumstance that the guest of an aeronaut, who tries a trip just for the experience, is quite often marked out by fate as a victim."

PERFECTING THE HELICOPTER

By Paul Cornu.

WE have read with much interest the article by Mr. C. H. Chalmers upon the helicopter in the February issue of *Aeronautics*, and we admire the ingenuity of his propeller, which exhibits many ideas that are new and must have required much thought and experiment on the part of its inventor, and shows that he thoroughly understands the requirements demanded for a perfect propeller blade.

We have ourselves made a number of experiments with sustaining propellers, but it is difficult to compare ours with those of Mr. Chalmers, since the experiments were not made under similar conditions, and since it is not easy for us to translate the tables given in the article. We will, however, give you such results of our efforts as we think most likely to be useful.

Our experiments have all been made under constantly similar conditions. We have made a rigid structure of steel tubes, upon which were fixed the motor and transmission gear. The motor operated two vertical shafts revolving in reverse directions. The propellers to be tried were keyed on to these shafts. The entire apparatus was mounted on a swinging platform, and worked inside a shed, so that it was free from all exterior disturbances. The motor was furnished with a Prony brake applied direct to the surface of the horizontal shaft which drove the verticals, and upon the verticals was a Renard dynamometric register.

The diameter of the various propellers tried was from 4 m. to 6 m., and the motor used was an eight-cylinder Antoinette capable of developing 20 horse power. The propellers were two-bladed with aluminum blades riveted upon tubes 40 mm. in diameter, the extremities of the tubes being encased in sleeves of aluminum, and to alter the pitch of the propeller it was necessary only to loosen two screws.

Our first object was to discover the amount of force absorbed by the tubes or arms, which gave no sustaining power. To obtain this we mounted two tubes of 40 mm. diameter and 2 m. long, and found that to revolve them at 300 revolutions per minute required 12 horse power! We repeated the experiment several times, as in all cases we do, so as to obtain an average, and always 12 horse power was necessary. We assume, of course, that there was some loss of power due to the transmission, although that was mounted on ball bearings. But it was obvious that an inventor who would place blades on the ends of such tubes and wish to have them revolve at 300 revolutions per minute would use up 12 horse power simply in making the supporting tubes penetrate the air.

It is necessary, therefore, either to do away with such tubes or give them some form which would enable them more readily to find a passage through the air.

The second series of our experiments had reference to the surfaces of the blades. We had believed, as we wrote last year, that it would be possible to obtain an economical sustentation with propellers of small diameter. We thought that in diminishing the diameter, one could construct such propellers in aluminum without having an excessive weight, and that one could in that way obtain surfaces that would be truer and less subject to get out of shape, and consequently give more thrust. Our experiments have proved that we were deceived.

We found that it required far less power to lift a given weight with the muslin-covered 6-m. diameter propellers of our big 1907 helicopter (with which we lifted two men) than was necessary with metal propellers of 4 m. diameter, although much more carefully made. This difference of thrust was not due, as one might have supposed, to the difference of the circles of air cut by the two propellers, but to the difference of the supporting surfaces. It would be useless to increase the diameter of a propeller unless one also increased the surface of the blades.

In our first tests we used a propeller with two blades of aluminum 1.25 long and 0.40 m. wide, mounted upon arms giving a diameter of 4 m.

The circle of air cut by these propellers had an exterior diameter of 4 m. and an interior diameter of 1.50 m., or a surface of 10.79 sq. m. To lift 100 kg., the propeller had to turn at 300 revolutions per minute, and the power required was 11 horse power in addition to the 12 horse power necessary to turn the arms.

In the second tests we used similar blades, but mounted on arms giving a diameter of 6 m., so that in this case the surface of air affected was 15.70 sq. m. To raise the 100 kg., these propellers had to turn at 170 revolutions per minute and 11 horse power was necessary as before. Therefore, though the circle of air attacked was much greater, the thrust obtained was not more.

To obtain a better thrust, it would have been necessary to enlarge the blades. For propellers of sustentation, the largest blades possible seem to be required, but the maximum size can only be determined by experiment. Such experiments with full-sized propellers are costly and take much time. We have therefore attempted tests with models on a 1 to 10 scale; but the results were too variable to allow of any conclusions.

When one knows by experiment the maximum size which should be given to each part of the propeller blades proportional to the circle of air attacked, one could then increase the diameter of the propellers to the extreme limits which the construction would permit. The greater the surface of the blades, the greater will be the thrust of the propeller for the power exerted.

We believe that two-bladed propellers are best. These involve the least amount of detrimental surface, such as the arms. If for any special reasons one employed three or four blades, the total surface ought not to be more than that of two blades of the same diameter.

A helicopter ought always to have at least two propellers turning in opposite directions to equalize all reactions. In our helicopter of 1907 the two propellers were placed side by side. That arrangement is very inconvenient, and complicates the chassis and transmission. We have since tried superposed propellers on concentric axes. With such the thrust is good if one leaves sufficient separation between the two propellers and gives to the lower propeller a little greater thrust than the upper one.

We have also tried concentric propellers differing very much in diameter, each cutting its own circle of air and the smaller revolving much faster than the larger. This enables a much lighter shaft to be used for the upper propeller. But we believe that two superposed propellers of equal diameter are best, since they give the maximum of surface with the relative minimum of obstruction.

Sooner or later one will certainly obtain the perfect propeller of sustentation, and then when we have an excess of lifting power, it will not be difficult to transform that into horizontal propulsion. If one used planes of light surface, one might use the whole of the ascensional force to propel the apparatus horizontally. It would be necessary to enable the helicopter to have the ability to alight safely after the motor had stopped; and to do that it looks as if planes will assuredly have to be furnished. It is very difficult to obtain sustentation and propulsion with the same propellers; but the ideal to work for is a propeller which will give the thrust and speed necessary for propulsion, and which will be so arranged that they will form aeroplanes themselves. An apparatus so formed would be at once both a helicopter and an aeroplane.

We have tried to solve the problem with our helicoplane*, the propellers of which have pivoted blades; but we have not yet made the necessary extended experiments.

* See April, '09, issue.

SEVENTY-ONE FLIGHTS IN ONE MONTH

Army Officers Proficient

SEVENTY-one flights have been made to November 9 in the Government aeroplane at College Park, Md., during the course of the instruction of Lieut. F. P. Lahm, Capt. Chas. De F. Chandler, Lieut. F. E. Humphreys, Lieut. B. D. Foulois and Lieut. Sweet, beginning October 8 and ending November 5, when, in making a sudden landing due to the engine misfiring, the skid and right wing of the aeroplane were damaged. Repairs are now being made.

HUMPHREYS MAKES 61 MIN. ON FOURTH FLIGHT.

Lieut. Humphreys' flights might be taken to show the progress of an aviator. Beginning with one of 3 min. alone, he made one of 8½ min., 24 min., and then took up Lieut. Foulois for 61 min. and 18 min. respectively. Lieut. Lahm comes next in point of length, making one alone of 58½ min. These two long flights were the longest made during the above period.

Following is a complete list of the flights:

NAME FIRST GIVEN IS THAT OF THE PILOT.

Oct. 8.—Wright alone, 3 min.; Wright alone, 4 min. 51 sec.; Wright alone, 3 min.; Wright and Lahm, 5 min. 8 sec.; Wright and Humphreys, 4 min. 15 sec.

Oct. 9.—Wright alone, 6 min. 33 sec.; Wright alone, 3 min. 23 sec.; Wright alone, 1 min. 6 sec.

Oct. 11.—Wright alone, 3 min. 50 sec.

Oct. 12.—Wright and Humphreys, 7 min. 20 sec.

Oct. 15.—Wright and Lahm, 4 min. 48 sec.; Wright and Humphreys, 1 min. 32 sec.; Wright alone, 9 min.; Wright and Lahm, 14½ min.; Wright and Humphreys, 3½ min.

Oct. 16.—Wright and Humphreys, 13 min. 18 sec.; Wright and Lahm, 13 min. 44 1/5 sec.; Wright alone, 3 min. 34 4/5 sec.

Oct. 18.—Wright and Humphreys, 11 min. 47 2/5 sec.; Wright and Lahm, 18 min. 37 2/5 sec.; Wright and Humphreys, 10 min. 13 3/5 sec.; Wright and Lahm, 11 min. 34 2/5 sec.;

Wright and Humphreys, 9 min. 37 1/5 sec.; Wright and Lahm, 9 min. 19 4/5 sec.

Oct. 19.—Wright and Humphreys, 11 min. 17 sec.; Wright and Lahm, 4 min. 10 2/5 sec.; Wright alone, 3 min. 15 sec.; Wright and Humphreys, 18 min. 40 sec.; Wright and Lahm, 19 min. 6 sec.

Oct. 20.—Wright and Humphreys, 3 min. 25 sec.; Wright and Lahm, 6 min. 28 sec.; Wright alone, 2 min. 31 sec.; Wright and Humphreys, 27 min.

Oct. 21.—Wright and Lahm, 33 min.; Wright and Humphreys, 1 min.; Wright alone, 2 min.

Oct. 22.—Wright alone, 3 min.; Wright and Humphreys, 42 min.

Oct. 23.—Wright and Lahm, 18 min.; Wright and Humphreys, 8 min.; Wright and Foulois, 13 min.; Wright and Lahm, 11 min.

Oct. 25.—Wright and Foulois, 13 min.; Wright and Humphreys, 11 min.; Wright and Lahm, 18 min.; Wright alone, 1½ min.

Oct. 26.—Humphreys alone, 3 min.; Lahm alone, 13 min.; Humphreys alone, 8½ min.; Wright alone, 2 min. 15 sec.; Lahm alone, 5 min.; Humphreys alone, 24 min.; Lahm alone, 40 min.

Oct. 27.—Wright alone, 4 min.; Wright alone, 2 min.; Wright and Foulois, 28 min.; Wright and Chandler, passenger, 6½ min.; Lahm and Humphreys, 36 min.

Oct. 29.—Lahm and Humphreys, 1 min.

Oct. 30.—Foulois and Humphreys, 10 min.; Lahm and Humphreys, 14 min.; Foulois and Humphreys, 39 min.

Nov. 1.—Lahm alone, 16 min.; Lahm alone, 58½ min.; Wright alone, 2 min.

Nov. 2.—Wright alone, 2 min.; Wright and Lahm, 2 min.

Nov. 3.—Humphreys and Foulois, 61 min.; Lahm and Sweet, passenger, 9 min.; Humphreys and Foulois, 18 min.

Nov. 5.—Lahm and Humphreys, 9 min.

CHANGES IN GOVERNMENT AEROPLANE.

The upper surface of the front rudder of the Wright aeroplane was removed and placed as a fixed horizontal surface just in front of the rear rudder and lower than the upper main surface. This gave the machine increased stability which was an aid in instruction. A double set of levers was added to the machine to aid the instruction.

Capt. Chas. DeF. Chandler, signal corps, in addition to his duties as disbursing officer of the signal corps, also has charge of the aeronautical division.

Second Lieut. Frederic E. Humphreys, corps of engineers, is relieved from duty in the aeronautical division.

CONSTRUCTIONAL AIDS—VII

FIG. 2 is an English device, recently patented by Alfred P. Portway, to take the place of a turnbuckle. It consists of a one-piece steel stamping, 1 in. in diameter, with a central boss. Around the rim are inclined slots, diametrically opposite one another, in pairs. The central boss is also slotted in line with one pair of the rim slots. The wire to be tightened is placed in the center slot and the two rim slots in line with it. On rotating (in the direction of the inclined slots) the whole device, by means of a key or screwdriver placed in the slotted boss, the wire slips from the rim slots in which it is resting, and on meeting the next pair falls into them and is automatically locked by its own tension. The surplus wire is wound on the boss.

In Fig. 3 is shown the method by which Bleriot attached the end of his round rubber shock absorber to the wires which go up to the sliding ring on the steel front upright of chassis. The end of the rubber is inserted in the cap and then the split tapes nut screwed into the cap compressing the rubber. These springs are built up into a cable out of innumerable fine strands of rubber. The rubber cable is then covered with woven cotton fabric.

Instead of pulleys for warping or wing tip operating wires, short lengths of Bowden wire might be used, through a hole in the strut, or clamped on to the main beam, as in Fig. 1.

A loose joint connection device is shown in Fig. 5.

Fig. 4 shows the method of tightening guy wires in use by Brauner and Smith on their biplane at Morris Park.

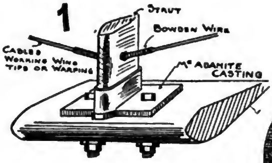
In model work, a subscriber suggests the plan illustrated in Fig. 6 for tightening the guy wires. He uses an ordinary ⅛-in. stove bolt, slotted at the thread end. Insert the wire in the slot and turn the bolt with a screwdriver to the desired tension and then tighten the nut.

Fig. 7 shows the central portion of the Brauner-Smith machine. The outriggers supporting the vertical rudder are bent as shown to provide room for the propeller to turn. The right and left steering is also illustrated.

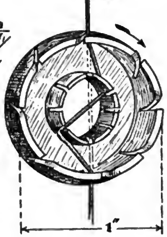
Foreign Aeroplanes No Fly for U. S.

The Farman machine which was not flown by Aviator Ozmont at St. Louis is now at the Indianapolis motor parkway and the Bleriot, which Ralph Saulnier took to Ampere (N. J.) to sell lots is dismantled waiting for a new cylinder. It didn't fly, although the engine was run a little. Then, someone threw a brick at the machine which hit and broke a cylinder, so the press agent said. Maybe it was only the piston that seized and pushed a piece out of the side.

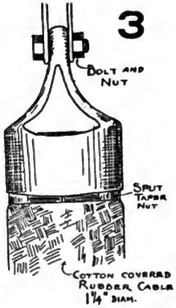
1


STRUT
BOWDEN WIRE
CABLES WORKING WING TIPS OR WARPING
McADAMITE CASTING

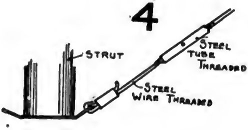
2


1"

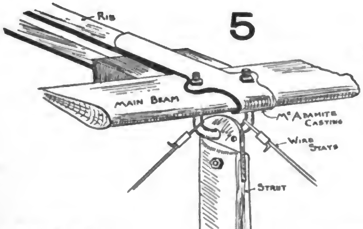
3


BOLT AND NUT
SPLIT TAPER NUT
COTTON COVERED RUDDER CABLE 1¼" DIAM.

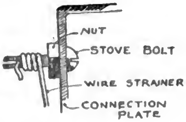
4


STRUT
STEEL TUBE THREADED
STEEL WIRE THREADED

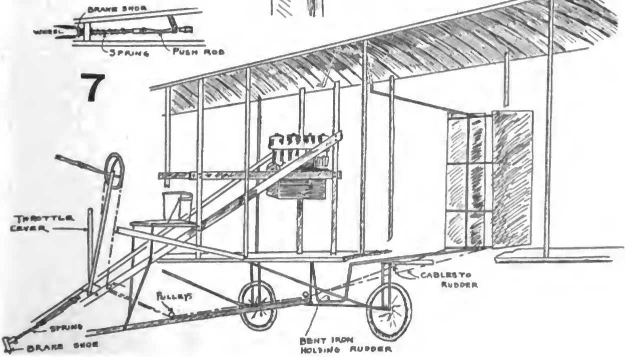
5


RIB
MAIN BEAM
McADAMITE CASTING
WIRE STAYS
STRUT

6


NUT
STOVE BOLT
WIRE STRAINER
CONNECTION PLATE

7


BRAKE SHOE
WHEEL
SPRING
PUSH ROD
THROTTLE LEVER
PULLEYS
SPRING
BRAKE SHOE
CABLES TO RUDDER
BENT IRON HOLDING RUDDER

TALKS WITH INVENTORS, III

By F. O. Andreae.

PATENT ATT'Y.

A SUMMARY on the nature and duration of *patent grants* in *foreign countries* is, I am sure, of interest to all inventors. I will therefore try to convey a concise and clear idea as to the most important requirements and conditions imposed by the laws abroad.

GERMANY.

Patent is granted for 15 years from the day following that on which the declaration of the invention was made. Certificate of addition ending on the same date as the patent, or in some cases taking the place of the patent.

New inventions of industrial utility are patentable with the following exceptions: Inventions for articles involving a breach of the law, or of morals, food stuffs, articles of consumption and medicines, as well as substances obtained by chemical means; the process of obtaining such substances, however, is patentable.

An invention is not considered new in Germany if, at the date of application, it has already been described in publications made within a century, or if it has already been in use in the country in such a manner as to render it possible for experts in the subject to have made use of it. Applications in respect of inventions published officially abroad are only opposable after three months from the date of the publication if the application for the patent is made by the inventor or those claiming under him, and if the publication is made in a country granting reciprocal rights.

The inventions must be worked three years from the date of publication of the grant, and compulsory licenses may be ordered. There is a special tax on the patent being granted, then annual fees.

AUSTRIA.

Patent is granted for 15 years from the date of the publication in the *Patent Journal*. Certificate of addition ceasing on the same date as the patent, or in some cases taking its place.

Patentable inventions: New devices capable of industrial application with these exceptions: Inventions against law, morals or health; inventions destined to lead the public into error; scientific theories and principles: devices and products relating to objects reserved as State monopolies; food stuffs and articles of consumption for human beings; medicines or disinfectants; materials produced by chemical means.

The processes by which any of these last-named articles are obtained remains patentable.

An invention in Austria is not considered new if, before application, it has been described in printed publications, used, exhibited or introduced into the country, already been the subject of protection in Austria and subsequently come within the public domain. The same provisions as in Germany in relation to official publications of foreign patents apply, except that the time is extended to six months.

The invention must be worked within three years from the date of the publication in the official journal of the grant of the patent. Compulsory licenses may be ordered. There are annual fees.

BELGIUM.

The grant is for a term of 20 years from the date of application. In patents of importation the duration not to exceed that of the patent previously obtained abroad for the longest term. Improvement patents end at the same time as the principal patent.

Every discovery or every improvement capable of being worked as an article of industry or commerce is patentable.

Conditions as to novelty: The patented article must not have been employed, put in use or worked by others within the kingdom for a commercial purpose before the legal date of the invention, and further, the invention must not, previously to the date of the deposit, have been brought out in a printed work or publication unless, as regards patents of importation, the publication is exclusively the result of a legal requirement.

The invention must be worked within a year from the commencement of working abroad. The invention must never cease to be worked for a period exceeding one year.

There are annual fees, but no additional annual fees for improvement patents when these are granted to the grantee of the principal patent.

DENMARK.

Duration of grant, 15 years.

Certificate of addition ends at the same time as the principal patent. (Special patents are granted called dependent patents.)

All inventions which can be industrially utilized, or which can be industrially employed, are patentable.

These are exceptions: Inventions without any real importance, inventions the exercise of which is contrary to law, morality or public order, medicines, articles of food or refreshment and the processes for the production of articles of food.

The invention is not considered new, if at the date of the deposit it has already been

(Continued on page 243)

IN THE WORLD OF AVIATION

Curtiss and Willard Flights—Wright Injunction Suit—Van Anden Aeroplane—1910 Aviation Meets—Automobile Club Prize

The Van Anden Aeroplane.

Frank Van Anden, a member of the Aeronautic Society living at Islip, L. I., has disjointed his machine at the central section and is storing it in his garage waiting for ice to form on Great South Bay when experiments will be continued.

While the machine is wholly experimental, many successful short flights up to about 500 yds. have been made with it during the month of October. After the flight mentioned in the November number, the propeller was broken. A new one being fitted, flights were continued up to Oct. 19th, when, in a strong fitful wind, the machine was caught in a heavy gust and keeled over, righting itself with the automatic device employed just before the landing was made, which was somewhat heavy and buckled the front wheel.

DESCRIPTION OF MACHINE.

Surfaces. The two superposed planes measure 26 ft. spread by 4 ft. front to rear, spaced slightly over 4 ft. apart. Silkeline, coated with Hartford Aero Varnish, (Hartford Rubber Works, Hartford, Conn.), is used and has proven very satisfactory. The varnish is very elastic and does not crack. The ribs are of laminated spruce curved 1 in. to the foot, the deepest part of the curve (4 ins.) being 1 ft. back from the front edge. The angle of attack is 4°. Struts are elliptic in cross section, also of spruce, which is employed throughout. The main beams, each of which are in three sections, are nearly half-round, that is, the cross section area is slightly greater than a half circle. The three sections of the beams are fastened together by a metal sleeve. Each wing unjoints at a point above the rear wheels by merely unhooking the fittings joining the beams and struts and pulling the wing out of the sleeves.

Rudders. The two-surface horizontal front rudder measures 2x2x4 ft., pivoted at its lateral center 8 ft. from the front edge of the main planes. The two-surface rear horizontal rudder measures 2x2x2½ ft., pivoted, as in front 15 ft. from the rear edge of the planes. Hinged to the rear central strut of this tail is a vertical rudder measuring 2 ft. high by 3 ft. long. This operation of the front rudder and the rear vertical rudder is the same as in the Curtiss machine. Pushing out on the steering wheel steers the machine down, pulling back steers up. Moving wheel left and right steers in those directions respectively.

Wing Tips. The two wing tips measure 2 ft. front to rear by 6 ft. spread and are hinged half way between the main surfaces to the two outermost rear struts. Cables run from these to an automatic device working with power from the engine, which automatically operates the tips with the tilting of the machine. Normally the wing tips are held horizontal by stiff springs introduced in the cables outside of the device. This device is purely experimental as yet and its operation is not to be made public now. Results obtained thus far are satisfactory, with the exception that it is not quite sensitive enough.

Power Plant. A 50 h. p. "H-F" water cooled motor, one of the aeronautical engines just put on the market by the Harriman Motor Works, 1876 Broadway, New York, drives a 6 ft. diam. laminated wood propeller with a 17 degree pitch at the extremities, increasing toward the hub. The rear end of the motor is about 6 inches back from the rear transverse beam and the engine shaft is in a direct line with the axes of the two horizontal rudders. An R. I. V. ball bearing carries the shaft at this point. Flying, the motor turns at about 800 r. p. m., delivering 180 lbs. pull. A test of the motor running at 1200 showed a pull of 250 lbs. on the scales. Bosch magneto provides ignition.

Running Gear, Etc. The whole apparatus is mounted on a five wheeled chassis in the form of a triangle. Just behind the front wheel which forms the apex of the triangle are two other, lighter, wheels fitted with springs to absorb the shock of landing. The front wheel is normally off the ground and comes in contact only in landing when the two wheels just mentioned move up under the shock and allow the front wheel to touch for a moment. At the base of this triangle are two heavy motorcycle wheels, fitted with Hartford aero tires and mounted each on motorcycle forks. A brake on the front wheel and the throttle are operated by the feet of the aviator who sits on a seat ahead of the supporting planes, fastened to the two long wood strips which run from the front wheel to the engine bed, similar to the arrangement in the Curtiss machine.

At each lateral extremity of the apparatus is fastened half an ordinary buggy rim, obtained from the local wheelwright. This is of hickory, tough and springy.

NEW FEATURES.

A new structural feature is the use of the half-round beams. The greatest diameter is but ¾ in. and, of course, the vertical dimension is much less. To obtain strength a short mast extends at right angles to each beam between each strut and toward the opposite surface. A wire stay runs through a brass lined hole in this little mast to the fitting at the junction of the strut with the beam. In addition, each mast is stayed to the corresponding mast by a wire, as shown in the illustration.

Instead of using a cast or brazed fitting for the struts, a heavy wire is run through each strut and then bent at right angles and run through the beam on each side, threaded and tightened with nuts. The guy wires hook into this same device.

A short dowel running about a ½ in. in both the strut and beam prevents any looseness.

Auto Club Offers Motor Prize.

Following close upon a written suggestion made to the Technical Committee of the Automobile Club of America by AERONAUTICS, comes the official announcement of a $1,000 prize and also, as mentioned last issue, the club will soon be in a position to hold a contest for aeronautic motors on the new dynamometer. Below is the resolution adopted by the Board of Governors:

Resolved, that a prize of $1,000 to be known as "The Aero Club of America-Aviation Section of the Automobile Club of America Prize" be offered for the best aero motor performance on the new absorption dynamometer for the year 1910, the rules for the test to be formulated jointly by the Aviation and Technical Committees of the A. C. A.

The following have been appointed to serve on the committee to formulate rules governing this prize: Wilbur Wright, Glenn H. Curtiss and Charles M. Manly.

Aeronautic Society Answers Injunction.

New York, Oct. 29.—Answer is being made today by the Aeronautic Society to the bill of complaint in the proceedings brought by Orville and Wilbur Wright. The society, through its counsel, Emerson R. Newell and Thomas A. Hill, denies that the complainants are entitled to any injunction restraining it from using the aeroplane which it purchased last spring from Glenn H. Curtiss, and that the machine itself or the use of it is any infringement of patent rights.

CLAIM WRIGHTS NOT THE FIRST TO FLY.

This answer denies that the Wrights were ever the original inventors of improvements in flying machines not known or used by others in this country before such invention and that the alleged invention was the first instance in the history of aviation that a gasless machine made flights under the control of an operator, in fact, denies that the Wrights' invention gave the world the first machine to actually and successfully fly and thus created a new art or an epoch in aerial endeavor.

In referring directly to the patent itself, denial is made that it lawfully gives the Wright Brothers the full, exclusive, or any right to the alleged invention.

That the United States Government, by reason of its purchase and operation of one of the Wright aeroplanes, recognizes the validity of the patent rights, is made the basis of another denying clause.

In alleging the Wright patent to be void by reason of prior patents or descriptions, six United States patents are cited, five British, four German and one French, as well as issues of the American Engineer and Railroad Journal during 1893, 1894 and 1895. The United States patents named are as follows: Marriott, No. 97,100; Davis, 291,990; Bechtel, 429,373; Mouillard, 582,757; Stanley, 659,264; Jonnston, 722,516; that of Marriott dating back to 1869.

Also, that several persons in the United States made use of the devices claimed in the patent prior to the invention. These names are: O. Chanute, Dr. George A. Spratt, Dr. A. F. Zahm, A. M. Herring, Hugo Mattullath, Prof. I. J. Montgomery, E. P. Johnson and Carl Dienstbach. And that, the invention claimed in the patent involved nothing more than mere mechanical skill and "was not patentably novel."

As Messrs. Newell and Hill also represent Glenn H. Curtiss and his company, it is probable that an almost identical answer will be made in the Buffalo court to the demand made by the Wright attorneys for an injunction restraining the company and Curtiss from making and using the Curtiss aeroplane. The application for an injunction was made on September 30th, at Buffalo, N. Y., in the latter actions, and argument will be heard December 14th.

SUE ON BLERIOT MACHINE.

Injunction has also been asked to restrain Ralph Saulnier from using the Bleriot type XI. monoplane, which he has imported for money-making purposes. The planes of the Bleriot are capable of being warped.

On November 6th, Wilbur and Orville Wright called at the French Consulate in New York and received the decoration of the Cross of the Legion of Honor presented by the Consul General.

J. N. Sparling, 503 Missouri avenue, E. St. Louis, Ill., has completed a monoplane 30 ft. spread by 30 ft. in length, total supporting surface 275 sq. ft., weighing 400 pounds, and is waiting for a Curtiss 40 h. p. engine. The lateral stability is claimed to be automatic.

Clifford Beckham, of Ft. Worth, Tex., is preparing to construct a full-sized biplane machine in the near future. The power models constructed during a number of years' experiments have shown the way to the big flier and Mr. Beckham, of course, has the proverbial confidence of the aeronautic enthusiast. Mr. Beckham is junior partner of the law firm of Beckham & Beckham, his father, Judge R. E. Beckham, one of the oldest members of the Ft. Worth bar, being the senior half.

BIG CITIES WANT AVIATION MEET.

Gordon Bennett Balloon Race Forgotten.

The east is watching with absorbing interest the outcome of the proffers made by the Baltimore and Washington aero clubs of grounds at College Park, Md., for the aviation meet in 1910. Both of these clubs have joined hands and are waging an active campaign to induce the Aero Club of America to select that site. The Washington *Post* has promised to offer a $1,000 trophy.

There seems to be no doubt but that $100,000 can be raised for financing the offering of prizes.

College Park is suitable, Wright having been using it to teach the Army officers, and it is accessible by either the Pennsylvania of B. & O. main lines, or by the electric line which runs between Washington and Baltimore.

Eleven thousand dollars have already been subscribed at a meeting held Oct. 26 as a "starter" and a Committee of One Hundred will raise the guarantee fund.

St. Louis is another applicant at the throne of aeronautics in the United States as represented by the A. C. A. and promises to raise $100,000 if necessary, offering, as one prize alone, $20,000 to hold a speed race on a certain hour of a certain day without regard to weather conditions. Twenty-five thousand dollars is also suggested as a duration prize and $15,000 for altitude.

Los Angeles Offers $150,000 for Meet.

Los Angeles, Nov. 8.—The California Aviation Society was organized today with Henry E. Huntington, president; Gov. J. N. Gillette, vice president; Willis H. Booth, treasurer; George B. Harrison, secretary and Dick Ferris, manager. United States Senators Perkins and Flint and ex-Secretary of the Navy Victor H. Metcalf are among the equally prominent directors.

The object is to foster aeronautics and aviation throughout California as a sport and science. All the large cities of the state are represented on the directorate, including leading state officials. Mr. Huntington is head of vast interests in California. Mr. Booth is a leading Los Angeles banker and president of the Chamber of Commerce. Mr. Ferris is a capitalist and well-known promoter of ballooning.

Allied with the society is a commercial corporation which has already raised over $50,000 toward a $150,000 fund for a big meet in Los Angeles in mid-winter, combining ballooning and aviation, to which will be invited all the aviators and balloonists of this country and the prominent ones abroad. Mr. Huntington himself has offered $50,000 to assure the event and Southern California business interests are preparing to raise a like sum.

Curtiss Company Adds Agency.

Ten machines are now in progress of construction at the Curtiss plant. After the first of January the price will be cut to $5,000, a reduction of $2,500 from the present asking price.

CURTISS AGENCY IN CHICAGO.

James E. Plew, the White automobile agent in Chicago, has taken the agency for the Curtiss machine for a considerable territory around Chicago and the first machine, bought by himself, is ready for delivery, and it will be placed on exhibition in his salesroom. Otto Brodie, an old time aeronaut and parachute jumper, has been engaged to operate it. An aeronautic department will be established in the new building in course of erection. This covers a lot 125 ft. by 190 ft. and will be four stories in height, one floor being devoted entirely to aeronautics.

Mr. Plew stated to the correspondent: "Our automobile business is rather extensive and we believe that the channel through which the aeroplane should reach the public will be with the automobile dealer."

Brodie has been at Latonia race track with Curtiss, learning to fly the machine. Partial arrangements have been made with the Chicago golf clubs to give exhibitions on their grounds and a flight will be attempted from Jackson Park, across the Midway to Washington Park and from there down the line of Michigan avenue to a landing on the lake front when Brodie becomes familiar with the machine.

Warner Makes Flights.

A. P. Warner, the first private individual to purchase a Curtiss aeroplane, has taken it to his home in Beloit where he expects to "do some stunts" with it. In speaking of his first flights he says, "There's nothing to it." He has already been in the air a dozen times and his flights have been about half a mile in extent. On the last flight the wire running to the steering gear broke and a heavy landing was made on plowed ground and two of the bamboo outriggers were broken.

Wright May Fly for Michelin Trophy.

All America will eagerly watch for either Wilbur or Orville Wright, who arrived in America on Nov. 4th after completing his flights in Germany for the syndicate there, to make a new world's duration record in contest for the Michelin prize and cup for 1909.

On the very last day of December last year it was that Wilbur Wright, in France, won the first of the Michelin prizes by a flight of 2 hours and 18 minutes. That has been badly beaten during the past few months and now Farman in a four-hour flight jumps the record ahead by a whole hour from his own three-hour flight at Rheims.

It must not be that the Wrights allow this challenge to pass unnoticed and lose for 1909 this most famous of all trophies. In his noncommittal way, Wilbur Wright led the reporters to think, on meeting his brother and sister at the steamer, that the prize will not be lost to America this year. After winning the biggest international balloon and aviation trophies this year, certainly we want to get the third of the trio. France realizes keenly that "troubles never come singly" and to lose the Michelin again this year will be a sad blow.

Y. M. C. A. Course Success.

The class in aeronautics which was started under the tutorship of Wilbur R. Kimball at the West Side Y. M. C. A., 318 W. 57th St., New York City, on Oct. 20th, has met with great success. At the opening lecture Messrs. Hudson Maxim, Winthrop E. Scarritt and Wilbur R. Kimball addressed about 100 present at the school. Over 30 students have already been enrolled, a lot of whom are enthusiastic and endeavoring to secure all the information they possibly can. Charles A. Stewart, Assistant Director, stated: "The demand for a school of this kind has been so great that we believe we shall have to put on another term as soon as this one is finished. Inquiries have been received from as far west as Salt Lake City, and from Maine and Massachusetts."

In conjunction with the aeronautic school, on Saturday, Oct. 23d, the Y. M. C. A. tendered a silver cup for the longest flight made by model aeroplanes in the competition held that day. This was won by Joseph H. Dalkranian with a flight of 44½ ft. by an Antoinette model driven by rubber bands. William H. Aitken was second with a flight of 44 ft., and Wilson Marshall, Jr., (12 years of age) with a flight of 40 ft. was third. One of the rules of the contest was that the machines must start from the ground and this was the cause of the flights being so short. Louis R. Adams, one of the judges, made an offer to the Y. M. C. A. of a silver cup as a prize for another contest in which the models were to be flown from the hand. He stipulated that the cup must be won three times in order to become the property of the winner. The first flight for this cup was held on the 23d and Wilson Marshall, Jr., won the first leg with a flight of 60 ft. 9 in.

November 6.—Wilson Marshall, Jr., today captured the second leg with a flight of 60 ft.

To Fly Over New York.

J. Fillmore Cox, M. E., of Bayonne, N. J., states that in pursuance of the agreement made between him and a Mr. Spencer of New York, he is to start from New York or vicinity and fly over Brooklyn and New York City before starting on a contracted flight up Long Island Sound to Westbrook, Conn. He says that Spencer Kerr, of London, will promote a syndicate in Great Britain to manage flights to be made by Mr. Cox during the coming spring in Great Britain with the machine, the American Vacu Aero Car, which was exhibited at Madison Square Garden, where it created a great deal of interest on account of its novelty. It bears no resemblance to any known type.

Cincinnati Has Aero Meet.

G. H. Curtiss will have for a competitor at the aeronautic meet at Cincinnati, Nov. 12, 13 and 14, his first pupil, Charles F. Willard. These two are the headliners in the aviation section.

Not to neglect the lighter side of the art, Lincoln Beachey and Roy Knabenshue will provide dirigible balloon racing with Cromwell Dixon as a, perhaps less well known, runner-up. Since St. Louis, 1907, Dixon, the boy airship pilot, has advanced from the foot-power stage and has long since joined the motor class with a Curtiss four-cycle air-cooled motor, driving a 60 ft. bag, 18 ft. in diameter. Several spherical balloons are to be inflated with hydrogen for a long distance race. Two hot air balloons complete the bill.

Cincinnati, Nov. 12.—G. H. Curtiss made four short flights and Charles F. Willard ten at the aero meet here today. Knabenshue, Beachey and Dixon all are on hand with their airships and at one time today the three were in the air at once. Knabenshue and Willard were both flying at once, on different aerial levels. H. H. McGill's balloon Dayton, Mr. Howard's Cincinnati, and the Haddock balloon are here.

Curtiss Flies In Chicago.

After filling his engagement in St. Louis, Mr. Curtiss went to Chicago, where he was scheduled to give an exhibition on the Hawthorne race track on the 15th, 16th and 17th of October. On the first two days the usual Chicago half-gale prevailed and it was only at dusk on the 16th that Mr. Curtiss was enabled to make a flight of about half a mile, at a height of about 35 ft. The next day, 17th, the wind was mild, and in the afternoon Mr. Curtiss made two flights. In the first he did not venture to sweep over the whole track because of the sharp turns required, but in the second flight he went around the whole track, or a distance of one mile.

Captain Baldwin also made two flights with his dirigible balloon and successfully negotiated the difficulties to be overcome in "The Windy City."

From Chicago, Curtiss visited friends in Detroit and gave a talk there.

Willard Flies In Philadelphia.

Philadelphia, Oct. 21.—C. F. Willard, in the Aeronautic Society's Curtiss biplane made some good exhibition flights at the Point Breeze track today under private management. After four short straight flights, he circled the track, won the applause of the assembled crowd and was congratulated by Dr. T. Chalmers Fulton, president of the Ben Franklin Aeronautic Association. His trial flights were made on Oct. 15th at sunset. The machine is now in temporary storage in this city.

Curtiss Will Fly at Los Angeles.

Hammondsport, N. Y., Nov. 10.—Mr. Curtiss has also contracted to make flights for one week at an aviation meet in Los Angeles, and will receive $10,000 for his participation in the event, which begins on January 3.

The object of making flights is to arouse interest in aviation. In carrying out his determination to make no exhibition flights except for the purpose of aiding the advancement of the science of aviation, Mr. Curtiss has arranged with Charles K. Hamilton, the dirigible balloon expert, whereby the latter will make all exhibition flights with the Curtiss aeroplane. Mr. Curtiss will participate in aviation meets or other affairs which are intended to popularize aviation or to demonstrate the present stage of advancement. He also intends to enter any races or competitions which his other affairs will permit.

Mr. Hamilton has made over a dozen successful flights in the Curtiss aeroplane, using the machine which Mr. Curtiss used in making his flights during the Hudson-Fulton celebration in New York. The first flight made by Hamilton was on October 29. He made five more flights on the 31st, confining his efforts to encircling the aerodrome at Rheims, which is two miles from Hammondsport.

NEARLY HALF-HOUR FLIGHT BY PUPIL.

On Monday, the first of November, Hamilton made a flight of 25 min. and 25 sec., encircling the field over 25 times. He came down because of the failure of his fuel supply. Before making this flight Mr. Hamilton had made five other short flights on the same day. In all of his flights Hamilton has shown great aptitude and so well demonstrated his ability to handle the machine that Mr. Curtiss engaged him to make exhibition flights at fairs and other public celebrations with the Curtiss machine. In addition to his experience with the dirigible balloon, Hamilton has made many gliding flights.

SHOCK-ABSORBING DEVICE.

On November 9 Mr. Curtiss made a flight lasting slightly over 5 min. for the purpose of trying out a new attachment intended to aid in stopping the machine after landing. The device has been attached to the underside of the single runner, and consists of a supplementary runner, which drops after the machine leaves the ground and takes up the shock when the landing is made, bringing the machine to a complete stop within 25 ft. The new device also prevents the machine from swerving around if a defective landing is made.

Clifford B. Harmon is numbered among those who are desirous of obtaining a Curtiss aeroplane. Mr. Harmon visited the Curtiss plant at Hammondsport last week, accompanied by C. K. Knasu, a Japanese manservant who may become the operator of Mr. Harmon's aeroplane. The aeroplane which Mr. Curtiss took to Cincinnati with him for the meet is the first of ten machines which are to be completed at the Hammondsport factory by the first of December. It will be delivered to James E. Plew, the Chicago agent for the Herring-Curtiss Company, who has bought the aeroplane for his personal use.

Mr. Curtiss has appointed Jerome S. Fanciulli, formerly of the Washington staff of the Associated Press, to direct the various enterprises in which Mr. Curtiss has engaged, with special regard to the development and exploitation of the Curtiss aeroplane.

The Aero Club of France has granted a certificate as "pilot-aviator" to Curtiss, along with one to Count Lambert and Jean Gobron.

Aviation Park and Club in Rochester.

Mr. DeLong, of the Elbridge Engine Company, Rochester, N. Y., has been very much interested in aeronautics, and the fact that he is known to be working on a specially light weight engine for aeronautical use has put him in communication with a great many people in western New York who are interested in aviation, and some of whom are building different forms of aeroplanes. At the request of some of these parties, the Elbridge Engine Company made application for aeronautical work for the use of a park recently given to the city The Cobb's Hill Park is not only the most desirable place for such experiments in this locality, but offers the advantage of having the warehouse and factory of the Elbridge Engine Company near at hand, thus providing for the storage, repairs or adjustment of machine.

The matter is at present under consideration by the Park Board and it is assumed will be passed upon favorably within a few days. It is probable that soon a local aero society will be formed, which it is expected will include the names of some of the most prominent men in the city.

F. A. I. Makes 1910 G.-B. Rules.

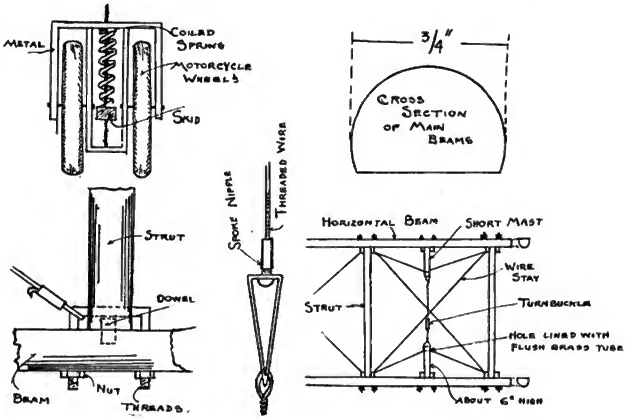
The fifth congress of the International Federation was held at Zurich just before the balloon races there. The officers for 1910 are: president of honor, M. L. P. Cailletet; president, Prince Roland Bonaparte; vice-presidents, Prof. Busley (Germany), Fernand Jacobs (Belgium), Count de la Vaulx (France), Roger W. Wallace (Great Britain), Prince Borghese (Italy), Cortland F. Bishop (United States); Count Castillion de St. Victor succeeds Besancon as secretary.

RULES FOR 1910 GORDON BENNETT.

The meeting fixed the rules for the 1910 G.-B. race to be held in the U. S. The course will be 100 kil. (62.137 miles), five times that of 1909, and the course not less than 5 kil. around. Each competitor will have but one start. Landings are permitted, but with a minimum distance of 5 kil. between.

Denmark, Russia and Holland were admitted to membership.

(Continued on Page 243)



Some Structural Features Used by Van Anden

THE FARMAN BIPLANE

Profiting by his experience with the Voisin machine, Henry Farman began experiments in April at Chalons with his own apparatus. A duplicate was used by Roger Sommers in his flight of August 7, when he was the first to beat Wilbur Wright's duration record of 2 hours, 20 minutes.

The machine has two superposed supporting surfaces of continental cloth, each 10 by 2 meters, 2 meters apart.

Six meters in the rear is a stabilizing cell, 2 by 2 meters. The two side walls of this cell are pivoted and serve as vertical rudders. In flying, the lower surface of the rear cell is on a level with the lower main supporting surface, while the upper surface of the cell falls below the corresponding one of the main cell.

In front of the supporting surfaces is the single-surface horizontal rudder of 4 meters spread, operated by a lever pivoted near its lower end, on one of the beams on which the engine rests. Moving this forward or backward raises or lowers the machine in flight.

Attached to the rear of the supporting surfaces, running from each extremity thereof towards the center, are wing tips. The two on each end may be tilted in opposite directions by a movement of the above-mentioned lever to the right or left.

To steer the machine to the left or right, the operator pushes outward with each foot respectively on the horizontal number of a metal "T."

A 35-40-h. p., 4 cyl. Vivinus was used in the Sommer record breaking machine, placed just on top of the lower supporting surface behind the radiator, which is in turn behind the aviator.

In the Rheims contests, two of the Farman machines were fitted with rotating Gnome motors, 50 h. p., air cooled. A Chauviere 2-bladed "Integral" propeller, 2.6 meters diameter by 1.15 meter pitch, at 1,200 r. p. m. is directly connected on the engine shaft.

The chassis is furnished with four wheels, in pairs, beneath the main surfaces. Three small wheels hold up the rear cell. Between each pair of front wheels is a skid which comes into play on landing only.

For 40 square meters supporting surface, with operator and supplies for an hour, the weight is 550 kilograms.

WITH THE LIGHTER THAN AIR

VERY BIGGEST AMERICAN AIRSHIP.

By Ralph A. Watson.

The first rigid frame dirigible to be constructed in the United States is now under way at Portland, Ore., where Edward P. Preble and J. J. Rekar have completed the frame for the large airship. The work of covering the frame has now begun and the maiden trip is expected by the end of November.

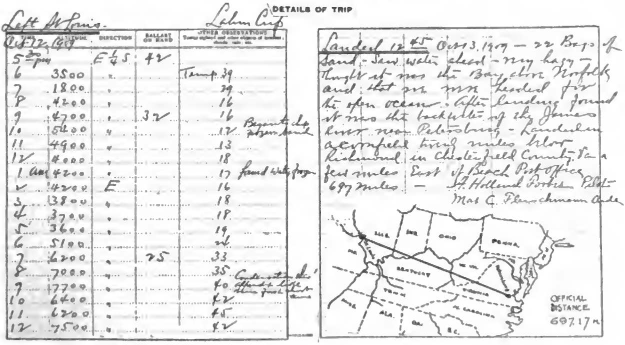
Instead of having an aluminum frame, the Portland ship is shaped with spruce strips 1 in. wide and from 1/8 to 1/4 of an inch in thickness. These strips are steamed and warped into shape and all is bound tightly together with piano wire. It is contended by Preble and Rekar that this frame will be not only lighter than that of the Zeppelin, but will be more rigid, stronger and have more resistance to accidental blows or the strain of a gale.

The length of the ship is 250 ft. The frame work as it is now set up is 25 ft. high. This framework will enclose seven gas bags, each of which will be separate from the others if desired, though the gas pressure can be automatically equalized in all of the seven bags. In case of accident to one bag, that one can be cut out from the rest without loss of time and gas.

The seven bags and the framework are to be in turn covered by one immense silken sheath. One striking feature, differing from the Zeppelin model, is that the nose or bow of the ship is shaped like a vertical wedge, and not like a cigar, as is the Zeppelin. The builders contend that this shape will give greater strength and less air resistance than the Zeppelin shape.

No nails or bolts are used in the construction of the framework. The "boat" designed to carry the engines and passengers is 180 ft. long and from 2 ft. wide at the ends to 4 ft. in the middle. The 35 engines are designed by Preble and are being manufactured in San Francisco and Portland. There will be four propellers each 5 ft. in diameter. The blades and 2 in. steel shaft will be cast in one piece in order to prevent accident. The weight of the entire machine will be 200 lbs. lighter than air, according to the plans of the builders.

In addition to helicopters for raising and lowering the machine in its flights, aeroplanes will be fixed to each side of the main bag so that the inventors believe that the ship will be able to glide much of the time without use of the engines. Gas for the use not only of the bags but for the engines as well, will be manufactured while the machine is in the air.



Left St Louis. Lahm Cup

DETAILS OF TRIP

TIME	ALTITUDE	DIRECTION	BALLAST ON HAND	OTHER OBSERVATIONS
Oct 12, 1909				
5 30 pm		E ¼ S	42	
6	3500	"		Temp. 39
7	1800	"		39
8	4200	"		16
9	4700	"	32	16
10	5200	"		12 Began to drop frozen sand
11	4900	"		13
12	4000	"		18
1 Am	4200	"		17 found water frozen
2	4200	E		16
3	3800	"		18
4	3700	"		18
5	3600	"		19
6	5100	"		21
7	6200	"	25	33
8	7000	"		35 Condensation [illegible]
9	7700	"		40 [illegible]
10	6400	"		42
11	6200	"		45
12	7500	"		42

Landed 12 45 Oct 13. 1909 — 22 Bags of sand - Saw water ahead - very hazy - thought it was the Bay above Norfolk and that we were headed for the open ocean - After landing found it was the backwater of the James River near Petersburg - Landed in a cornfield twenty miles below Richmond in Chesterfield County, Va a few miles East of Beach Post Office 697 miles — A. Holland Forbes Pilot
Max C. Fleischmann Aide

What Forbes' Ascension Record Looks Like

Forbes' Fast Trip Wins Lahm Cup.

On Tuesday, Oct. 12, 1909, A. Holland Forbes, pilot, and Max C. Fleischmann, aide, left St. Louis at 5:30 p. m. in the balloon "New York" for the avowed purpose of winning the Lahm cup. Not only was Mr. Forbes successful in the attempt but he made one of the fastest continuous trips on record covering officially 697.17 miles in 19 hrs. and 15 min.

At the start the ground wind was blowing 28 miles an hour and the thermometer registered 40° F. Forty-two bags of ballast were weighed in. By studying the accompanying log the reader will see at a glance the details of the trip. The average speed was 37 miles an hour although telegraph reports sent to St. Louis show that the balloonists covered the distance from Hinton, W. Va., to Lynchburg, Va., 120 miles, in 115 min.

According to the Government weather reports, Mr. Forbes expected to find a wind from the southwest during the night and to pass over Lake Erie and down the St. Lawrence valley on Wednesday, the day following. If this had happened he would undoubtedly have made a world's record. The landing was made 20 miles south of Richmond, at Beach, Va., with 22 bags of sand, having used only 20 bags for nearly 700 miles. The balloon came down in a cornfield belonging to Charles Graves, in Chesterfield County, with the wind blowing about 40 miles an hour. Mr. Forbes states that owing to the heavy wind and having no anchor he was obliged to rip the balloon over 150 feet in the air so that all the gas might be evacuated before coming to earth. The basket touched the ground, made one short jump of about 25 feet, the bag collapsed and the journey was finished at 12:45 p. m., Wednesday, Oct. 13, 1909.

From 10 o'clock Tuesday night the aeronauts were kept busy emptying one or two sand bags at a time on the bottom of the basket and breaking up with a hatchet the frozen bumps. About midnight they found the water in the glass bottles frozen, otherwise it was a most enjoyable trip for them both.

A new 80,000 ft. balloon has been ordered by Mr. Forbes of Capt. T. S. Baldwin for delivery in the spring. Clifford B. Harmon has now purchased Forbes' half interest in the "New York."

Bumbaugh Building Big Bag.

G. L. Bumbaugh and Carl G. Fisher will soon own a big dirigible, which Mr. Bumbaugh is now building. The envelope will be 166 ft. long and the framework 105 ft., driven by a 35 h. p. motor. This is in addition to a small dirigible being built for use next spring for Mr. Bumbaugh personally. This will make his fifth and will be named the "Hummingbird". The four others were: "Kathleen," "Albatross," "Condor," and "Swallow," owned within the last four years.

The balloons Chicago (110,000), Indiana (80,000), Hoosier (80,000), Indianapolis (40,000), Queen Louise (40,000), Columbia (40,000), Ville de Dieppe (40,000), are of Bumbaugh manufacture. The Chicago and the last three named are owned by C. A. Coey of Chicago; the Indiana, made for Mr. Fisher, has been since sold to H. H. McGill, of Dayton. The Hoosier is owned by Dr. P. M. Crume, of Dayton; the Indianapolis by Dr. Link and Russe Irvin of Indianapolis.

During 1909 in the dirigible, Bumbaugh has used 30,000 cu. ft. of hydrogen.

Lambert and Von Phul Beat Chandler Record in 44-Mile-an-Hour Trip.

Starting from St. Louis on October 15 in the St. Louis III on an attempt to break the Forbes-Fleischman Lahm cup winning record, A. B. Lambert and Louis Von Phul beat by a wide margin the 475 miles of Captain Chandler when he won the cup in 1907, but came a little short of equalling the distance of the New York. From St. Louis to "a point 15 miles north of Ridgville, Dorchester Co., S. C.," is about 665 miles; just where the landing was made has not been ascertained. The duration was 15½ hr., the average speed 44.3 miles an hour.

The ascent was one of the most dangerous ever witnessed at the gas works, owing to the puffy wind. The aeronauts narrowly saved themselves from dashing into the east fence of the inclosure and into the telegraph wires on the Levee by throwing out two and one-half bags of ballast.

The balloon did not clear the poles more than 20 ft., and H. E. Honeywell, who was superintending the inflation of the bag, with his assistants and the bystanders, made a rush for the bag to get it off, thinking it would strike the fence and spill the occupants. The great bag responded after a moment to the lightening and rose majestically above the wires and headed at an altitude of about 1,500 ft. a little south of east.

The balloon carried only about thirty bags of ballast. The gas was too heavy, having not been properly dried, according to Honeywell. This accounts for the small amount of ballast, as there was an unusually light equipment inside.

Semi-Centennial Meet to Commemorate Prof. Lowe's Trip.

Prof. Thaddeus S. C. Lowe's famous balloon trip from Cincinnati to Union, S. C., is to be commemorated by a semi-centennial celebration at Union, S. C., on April 20, 1911, if the plans of Allan Nicholson, editor of the *Union Progress* meet with support. Mr. Nicholson is working hard to bring this about, and has been in communication with Prof. Lowe at Pasadena, Cal., and it is intended to invite the Wright Brothers, Glenn H. Curtiss and others to duplicate the trip by aeroplane.

The famous trip Prof. Lowe made was during the War of the Rebellion. He left 3.30 o'clock on the morning of April 20, 1861, from the city of Cincinnati and carried a number of copies of the Cincinnati *Commercial,* edited by Murat Halstead. During the trip the height of 22,000 ft. was attained. Prof. Lowe's description of the landing amidst the fright of the negro population is very interesting. The cold was so intense that the water in the bottle had frozen, while the jug of Murat Halstead's coffee, wrapped up in a dozen thicknesses of blankets, was still hot after the nearly nine hours consumed on the journey. This apparent paradox was the cause of great wonder and astonishment. The distance traveled was estimated by Prof. Lowe as 800 miles. Mr. William Welch, of the office of the chief signal officer of the army, has kindly computed the actual distance in a straight line as 346 miles, that is, from town to town. This would make the speed average 38.4 miles an hour.

Blondin Reaches High Altitude.

Joseph A. Blondin and Roy A. Stamm in the latter's 18,000-foot hydrogen balloon, starting from Albuquerque, N. M., on Oct. 19, went to 12,792 ft. The landing was at three miles beyond the ranch of Angus McGillivray at the base of the Pedernal Mountains, a distance of 90 miles. It was intended to make a record trip for the Southwest.

8,000-FT. DROP IN FOUR SHORT MINUTES.

"We dropped eight thousand feet in four minutes when we made our landing," said Mr. Stamm. "Crossing the McGillivray ranch we were 13,000 feet in the air, our highest altitude. Three miles further we landed. While we knew we were dropping we did not appreciate our terrific speed earthward. We were going about thirty miles an hour eastward at the same time. We came down, remarkable to relate, with hardly a jar, owing to the skill of Mr. Blondin in manipulating the balloon. The anchor caught and we settled easily down, narrowly missing a big bed of cactus, on the slope of a hill on this side of the Pedernals, which are really only low hills themselves. Just as we reached the ground, however, a gust of wind struck us and turned the whole outfit over. The hot water bottle burst and let its contents down my neck, while Blondin got badly tangled up in the rigging. But we lay tight, holding on to the valve rope, and soon had the balloon deflated and lying on the ground. We folded it up into the basket and the trip was over."

According to Mr. Blondin's observations while in the air, the highest speed was attained at a height of 10,000 ft. crossing the Manzano mountains, when the balloon was going fifty miles an hour. The whole east side of the mountains, the aeronauts say, is covered white with snow and the cold blast was plainly felt as it came swirling up, while the wind, which could not be felt in the floating balloon, was heard roaring and whistling through the pine trees a thousand feet below. The range was crossed about midway between the Sandia and Manzano peaks about level with their tops.

Rodman Wanamaker of Philadelphia has purchased a Bleriot type XI. monoplane and it arrived the second week in November. A Mr. Robeson preceded the machine and after assembling it will instruct Mr. Wanamaker in the mysteries of the birds.

Gordon Bennett Balloon Classification.

The Aero Club of Switzerland has given out the official findings of the contest committee in the matter of the question over the winner's distance in the Gordon Bennett balloon race of October 3, and has decided in favor of E. W. Mix and A. Roussel, who represented the United States in the French-built balloon America II (77,700 cu. ft.), allowing him a distance of 696.62 miles, from Zurich to Ostrolenka, Warsaw, Russia; duration, 35 hr. 1 min. Alfred Leblanc was second in the Ile de France with 507 miles. Seventeen balloons started in this race: 1 Austrian, 3 German, 1 United States, 3 Belgian, 2 Italian, 3 French, 1 English, 3 Swiss.

Twenty-seven balloons took part in the point-to-point contest two days before, and in the distance race on the 2d twenty balloons started, 258 miles being the greatest distance made by any and 23 hr. the longest duration.

FORMER GORDON BENNETT RECORDS.

Lieut. F. P. Lahm (United States), 1906, from Paris, 410 miles.

Oscar Erbsloh, 1907 (Germany), from St. Louis, 872 miles.

Col. Shaeck, 1908 (Switzerland), from Berlin, 753 miles.

Dirigible Ascents in the U. S.

For the January number we are preparing a synopsis of the airship ascents made in this country during 1909, the amount of hydrogen gas used, etc., and would like very much to hear from all owners or operators of airships at the earliest possible date.

Airships Races New Exhibition Feature.

The dirigible balloon as a show proposition having waned from the spectators' point of view, and therefore from the view of the box office, it remained for Knabenshue and Beachy to create a new sensation and they are now *on tour* with two airships, each operating one in speed competitions at the big fairs in the south.

The Highest American Balloon Ascent.

One of the "ballons-sondes" which were sent up by Prof. A. Lawrence Rotch of Blue Hill Observatory from Pittsfield, Mass., during May and July, 1908, was not found for ten months and its record is most interesting. The instrument recorded completely temperature data from the ground up to 17,700 meters (11 miles). On May 7, the date it was released, a general storm prevailed so that the balloon traveling from the east was soon lost in clouds and its course could not be followed. It landed, however, 59 miles to the southwest, as determined by the place where the instrument fell two hours later. At the ground the temperature was 4.5° C., and this decreased as the balloon rose to the base of the clouds, which itself was considerably warmer than the underlying air. Above the clouds the temperature continued to fall with increasing rapidity up to a height of 12,500 meters (7.7 miles) where the minimum of —54.5° C. was registered. Here the great warm stratum was penetrated farther than ever before in this country, namely, to the height of 17,700 meters (11.0 miles) where the temperature was —46.5° C. An increase of 8.9° C. occurred, however, in the first 3000 m., for above 15,500 m. nearly isothermal conditions prevailed, confirming the belief of Teisserenc de Bort that what he calls the "stratosphere" is composed of a lower inverting layer with isothermal conditions above extending to an unknown height.

In an ascension last November in Belgium the relatively warm stratum was found to extend from 12,900 m. to the enormous height of 29,000 m. (18 miles) where there was still no indication of its diminution.

In the instruments used by Prof. Rotch at Pittsfield, special precautions were taken to limit the time they remained in the air and so prevent them from drifting out to sea with the upper westerly wind.

Official Returns St. Louis Balloon Race.

The official returns of the balloon race which took place from St. Louis Oct. 4, in connection with the centennial celebration of the city have been announced by the Aero Club of St. Louis.

First prize—Von Phul and O'Reilly; balloon St. Louis No. 3; Lawrence, Minn.; distance, 545 miles.

Second prize—Honeywell and Tolland; balloon Centennial; Silas, Ala.; distance 488 miles.

Third prize—Wade and Morgan; balloon Cleveland; Alexander City, Ala.; distance, 459 miles.

Fourth prize—Berry and Fox; balloon University City; Mooresville, Mo.; distance, 202 miles.

Fifth prize—Arnold and Taylor; balloon Pommery; Knobel, Ark.; distance, 177 miles.

Sixth prize—Harmon and Post; balloon New York; Edina, Mo.; distance, 152 miles.

Non contestants—McGill and Shauer; balloon Indiana; Albany, N. Y.; distance, 523 miles. Crume and Custer, balloon Hoosier; Russellville, Mo.; distance, 105 miles. These balloons were unplaced on account of their pilots not holding official certificates.

Winner of endurance contest—Harmon and Post; balloon New York; time, 48:26:00; highest altitude, 24,200 feet.

Race for 40,000-ft. balloons—First prizes; Bemis and Smith: balloon Peoria; Levins, Ill.; distance, 115 miles.

Second prize—Spencer and Denvir; balloon Missouri; Hibernia, Mo.; distance, 100 miles.

NEW AMERICAN ENDURANCE RECORD.

A new American official record for endurance of 48 hrs. and 26 min. was made by Mr. Clifford B. Harmon, pilot of the Aero Club of America, with Augustus Post, aide, in his balloon "New York" 80,000 cu. ft., during the "Centennial" races held at St. Louis, Miss., on Oct. 4th, 1909.

The balloon was built by Captain Thomas S. Baldwin of vulcanized rubber material made in America.

Leaving the Aero Club Park, St. Louis, at 5:15 p. m. Oct. 4th; landing was made at 5:41 p. m. on Oct. 6th, at Edina, Miss., 152 miles distant. The winds were variable and a much greater distance was covered.

SAN FRANCISCO-OAKLAND RACE

By Cleve T. Shaffer.

As a result of the Pacific Aero Club's challenge to the newly organized Oakland Aero Club, at the Pacific Club's show last August, San Francisco was treated to its first balloon race Sunday, Oct. 11th.

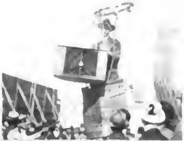
San Francisco was represented by the new balloon, "Queen of the Pacific," (40,000 ft.) piloted by Ivy Baldwin and accompanied by President J. C. Irvine of the Pacific Aero Club. Much interest attended the leaving of the balloon because of the christening ceremonies, which preceded the flight. Miss Geneve Shaffer, sister of the Secretary of the Pacific Aero Club, after appropriate remarks, broke a bottle of champagne which spattered over the side of the basket.

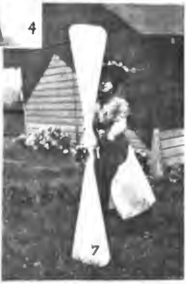
The Oakland club was represented by the balloon, "The Greater Oakland," (40,000 ft.); it was to have held President Martland of the Oakland Aero Club as a passenger, but owing to the balloon sucking air from holes near the bottom during inflation, it was unable to carry Martland and also the necessary ballast. P. A. Van Tassel was pilot.

A. C. Pillsbury of the Pacific Aero Club, brought out his twin balloon "The Fairy," (10,000 ft.) piloted by J. C. Mars of Seattle; it was an unofficial competition. Time of start: "Fairy," 2:30 p. m.; "Queen of the Pacific," 2:46 p. m.; "Greater Oakland," 3:05 p. m.

The day being calm even at high altitudes, the distances travelled were disappointing and the landings worse. The "Greater Oakland" was picked up by a launch about 8 p. m., in San Francisco Bay off South City, and the "Queen of the Pacific" an hour later off San Mateo. The "Fairy" landed shortly before 6 p. m. at Dunbarton.

The second race for the Portola cup was made Oct. 24th from Oakland, there being almost an entire change in pilots, passengers and rules.





1. Queen of the Pacific and the Greater Oakland. 2 A. C. Pillsbury in the basket of the Fairy, with a special panoramic camera. 2. One of Carl E. Myers' captive balloons. 4. Miss Geneve Shaffer. Ivy Baldwin, J. C. Mars and Miss Margaret Miller in second race for Portola Cup. 5. Myers' balloon and Baldwin dirigible at Worcester. 6. A. C. Pillsbury's Fairy. 7. A six and a half foot uniform pitch propeller made by Cleve T. Shaffer.

The Pacific Aero Club's entry "Queen of the Pacific" piloted by Capt. Ivy Baldwin, carried Miss Geneve Shaffer and the Oakland Aero Club's "City of Oakland" was piloted by Capt. J. C. Mars, with Miss Marguerite Miller as passenger.

This unique innovation in balloon racing necessarily caused a change in the rules which were amended so as to require that a landing be made within two hours of the start, the winner naturally being the one making the greatest distance.

The day was a poor one for racing as there was but little wind and that in the direction of the Bay. Capt. Baldwin, seeing that he was about to get over the water and the balloon leaking, wisely decided not to try for San Francisco and made a landing about two miles from the start. Time in air: 30 minutes.

Mars endeavored to reach Goat Island but failed and was towed back to Oakland shore. He made about a mile further than Baldwin, winning the race.

The third of the series was started from San Francisco on Oct. 31st with Miss Shaffer and Miss Miller again as mascots. Both balloons after traveling in the same course and in each other's wake, finally landed near Alvarado about 25 miles from San Francisco within the time limit.

Both balloons struck the water and only by heroic efforts were they again induced to leave it without sacrificing too much of their precious ballast.

(Continued on page 244)

Stevens' Balloon On Top of Madison Square Garden

The Advertising Balloon.

A new stunt in aerial advertising was inaugurated by A. Leo Stevens for the N. Y. Edison Co. at the recent electrical show in Madison Square Garden, New York.

Suspended from an 18,900-foot hydrogen gas balloon, the "Stevens 24," was a great silk disc 14 ft. in diameter, being a large iron ring inclosing a circle of pure white silk. Below this were six "Excello" flaming arc lamps, a new type recently put on the market. The light thrown on the silk disc from these lamps seemed to merge into one great reflector or mirror, the whiteness of the silk giving this impression. The current was supplied by a flexible cable. The balloon was covered with the usual net connected to a load ring, to which was attached the rope used for lowering or letting up the sphere of inclosed gas running off an electric windless. At various times the light from twelve searchlights was thrown on the balloon at an altitude of about 700 feet, the average height at which the balloon was kept. The weight of the lights, cable and ropes, ring, etc., amounted to about 850 lbs.

The tanks for making the hydrogen, piping, etc., were brought from the grounds of the Colonial Yacht Club, where the balloon did duty during Hudson-Fulton, knocked down, and hoisted to the roof of the Garden by the same windlass. After the close of the show the tanks were again knocked down and lowered to the ground and returned by Mr. Stevens' shop. Nearly a week was spent before and after insta!ling and removing the paraphernalia, and the cost of the plant, covering a dozen men day and night, iron filings, acid, etc., approximated $5,000.

News in the Manufacturing Field

HARRIMAN MOTORS.

The Harriman Motor Co., 1876 Broadway, New York, is prepared to make prompt deliveries of their "H.-F." motors now on the market. One purchaser whom a representative of AERONAUTICS interviewed expressed himself as much pleased with the results obtained, and the interviewed has flown.

Two standard sizes are made, 50 and 30 h. p., at normal speed of 1,400 r. p. m. The A. L. A. M. rating is 40 and 25 respectively, at a lower speed. The motor is of the vertical individual four cylinder, four cycle type. The cylinders are machined outside before boring, assuring perfect heat distribution. The water jacket on the head, including the valve ports, is cast with the cylinder, and the jacket on the barrel of the cylinder is of seamless brass tubing. The cylinders are threaded, and screw into the crank case and locked. The crank shaft is of vanadium steel, cut from the solid block, with hollow crank pins, but solid at the journal bearings and the driving end. The crank case is in two parts, the bearings being hung on the upper half. The lower section is partitioned, and its use is primarily as an oil tank. Bronze is used throughout, no ball or babbitt bearings being employed. The oiling system is by splash. For ignition is employed a high tension Bosch magneto or Atwater Kent battery system. The overhead cams operating the valves in the head are of cold rolled steel, hardened and pinned to a drill-rod steel shaft. One cam operates both intake and exhaust valves, while rotating through an arc of 180 degrees. The water is circulated about the heated parts of the engine either by means of a centrifugal pump or by syphon system. Auxiliary exhaust ports are provided to assist in the cooling.

NEW ELBRIDGE MOTOR.

The Elbridge Engine Co., Rochester, N. Y., is now planning a very light weight 2-cycle aeronautical motor, the details of which will be published subsequently. This will develop 40-60 h. p. at a weight not to exceed 4½ lbs. per h. p.

In the meantime, experimenters are continuing to use the stock motor weighing 8 lbs. per h. p., at 900 r. p. m. It is called to buyers' attention that the Elbridge motor ratings are at the approximate speeds at which they would be operated, and not at impracticably high speeds, and that 8 lb. per h. p. means delivered horse power, and not merely brake test power.

BALDWIN CLOTH.

Baldwin's Vulcanized Proof Material is gaining favor rapidly with aeroplane builders. All the Curtiss machines are covered with the Baldwin proof silk, and the manufacturer can boast of a long string of successes during the past year. Some of the achievements in which the material figures are given in the advertising section.

TIRES FOR AEROPLANES NEW INDUSTRY.

An entirely new branch of the rubber tire industry has been opened up, and is being given impetus by the aeroplane. The Hartford Rubber Works Company, Hartford, Conn., has made this a staple branch of its business, and is finding a ready sale for the product.

At first thought, one would be tempted to ask what need an aeroplane has for pneumatic tires. But, in the present stage of its development, the aeroplane cannot rise from earth with powerful flappings of huge pinions; it must run along the ground for some distance to gather the impetus necessary to send it soaring.

The especial requirements of aeroplane tires are strength, coupled with extreme lightness and resiliency in superlative degree. The thread fabric used by the Hartford Company is the very lightest, and designed primarily and exclusively for aeroplane tires. It will be readily seen that a tire for this use must be strong for the work it does on the ground, and very light so that it adds no excess to the weight of the machine in the air. Resiliency counts to a considerable degree in aiding the machine to rise. The rubber, too, receives especial treatment to fit it for the particular work it is called upon to perform.

Incorporations.

Schroeder Aerial Navigation Co., of N. Y., at Albany, with capital stock $75,000. Directors include Lindley B. Newby, George E. Fleming, and William H. Crow, all of New York.

Patents.

Charles W. Cheney, Brooklyn, N. Y., No. 936,303, Oct. 12, 1909. Aeroplane consisting of main supporting planes and gliding planes pivoted "to turn about an axis extending in the general direction of movement of the aeroplane."

Jos. A. Steinmetz, Philadelphia, Pa., No. 936,680, Oct. 12, 1909. Balloon of the usual spherical style having a rigid tubular ring secured at the "equator." In addition to the usual net surrounding the bag for supporting the basket, the latter is also connected to the ring.

Charles N. Lee, Gibbon, Neb., No. 936,916, Oct. 12, 1909. Propeller mechanism for airships, the characteristic feature of which is a plurality of truncated conical shells open at both ends, and rotatably mounted in axial alignment with each other, means for rigidly connecting said shells to each other, and one or more spiral vanes mounted on the inner surface of each of the shells.

Jeremiah S. Letts, Dickinson, N. D., assignor of one half to W. Guy Clark, Dickinson, N. D., No. 937,250, Oct. 19, 1909. Aerial navigation. An airship containing two reservoirs for compressed air and liquid air respectively. A propeller operated by the compressed air and expanded liquid air. Compression pumps operated by the propeller. Means for causing the heat developed by the compressed air to raise the temperature of the liquid air and vice versa; a tank into which the expanding compressed air and liquid air are delivered, and means for conveying said airs to the propeller.

David S. Foster, Syracuse, N. Y., No. 937,587, Oct. 19, 1909. Aeroplane. More specifically a helicopter since the characteristic feature consists of a vertical and horizontal propeller both of which are provided with adjustable blades for varying the pitch by manually operated means to control the power of either propeller independently.

August E. Mueller, Chicago, Ill., No. 937,381, Oct. 19, 1909. Motor driven aeroplane. An aeroplane member provided at its side margins with vertical planes and a swinging wing located beneath the aeroplane member and between the vertical planes.

Benjamin F. Seymour, Denver, Colo., No. 937,187, Oct. 19, 1909. Airship. Propeller rotating about vertical axis provide "means to impart a vertical movement" and four propellers arranged to independently rotate about horizontal axis at right angles to each other so as to include all points of the compass enable motion in any direction. The lifting propellers are composed of blades "each formed of a coniform sheet whose edges overlap in spaced relation to each other."

Milton D. Thompson, South Portland, Me., No. 938,291, Oct. 28, 1909. Propeller consisting of blades which are adjustable as to the angle of the blade with relation to the axis.

Wiley C. Perry, Luther, Okla., No. 937,956, Oct. 26, 1909, airship comprising a gas bag, a car suspended therefrom, forwardly tapering shells at opposite sides of the bag and at the forward end of the car, each of said shells having an open side wall and propeller blades arranged within the shells.

Reynon D. Reese, Philadelphia, Pa., No. 939,089, Nov. 2, 1909. Dirigible balloon, the envelope of which is formed of a series of circumferentially extending strips joined edge to edge and all terminating so as to form a single longitudinal opening in the bag. The car hung from the bag is provided with a structure at each end for holding the envelope at its ends and is capable of being collapsed or expanded at will.

Aero Feature of "1915" Exposition

The feature of the "1915 Boston Exposition," running from Nov. 1-27, is the Rheims winning Curtiss biplane for the exhibition of which a round sum was paid.

C. and A. Wittemann have a glider exhibit in charge of Wm. H. Aitken who is to demonstrate the art of gliding on Franklin Field.

MORE ROOM FOR AERO SHOW.

Boston, Nov. 13.—A second airship room was opened by the "1915" Boston Exposition in the old Art Museum yesterday to accommodate the aero show. The exhibit consists of large models, with working parts, of the ten types of aircraft which represent the progress of aerial navigation from its very beginning up to the present day. The aeroplanes have been very fully represented from the opening of the exposition in the original biplane in which Curtiss won the French aeronautical prize last summer, and the models of Wrights' machine and other heavier than air machines which surround it.

The collection of airships just entered at the "1915" Boston Exposition came through the Custom House Wednesday, having just arrived on the steamship Cestrian. It was a feature of the festival in Hamburg, Germany, last summer. It starts with a balloon such as was used in the first half of the last century, includes both free traveling and captive balloons, military balloons and dirigibles, and brings the history of ballooning up to date with the Santos Dumont No. 9, and Count Zeppelin's famous airship. The model of the Santos Dumont, which was built in 1894 and was the first balloon to carry a gasoline engine and to be driven around a closed circuit, is suspended above the door of the old Art Museum, outside, on Copley Square.

This interesting collection of models in the "1915" Exposition includes the airship of Giffard, who made an attempt half a century ago to propel a cigar-shaped balloon through the air with the aid of a small steam engine placed in the basket, in addition to the other models showing successive stages of development.

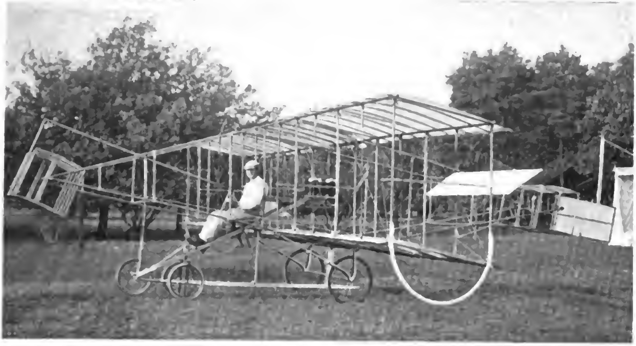
Visitors to the exposition not only can study many types of air craft side by side, see their workings, and compare them with even the minor experimental air vessels which are shown by photographs, but can witness some of the famous flights that have been made as they are reproduced on the moving picture machine in the old Art Museum. On the 11th a further advantage was provided in the lectures on aviation by Mr. A. E. Merrill, subject, "Aerial Navigation by Aeroplane," and Mr. H. H. Clayton, formerly of the Blue Hill Observatory, subject, "Aerial Navigation by Balloons."

The gliding flights by William H. Aitken on the Wittemann glider in Franklin Park, last Saturday, excited so much interest that the "1915" management has arranged for another series of flights to start from the top of Schoolmaster's Hill.

Eisemann Magneto Flies Round Eiffel

What would have happened had the motor of Count de Lambert's aeroplane stopped when he made his remarkable flight from Juvisy to Paris and around the Eiffel Tower on October 18? Would he have lived to tell the tale if the magneto had stopped when the plane was circling the tower at a height of 1,300 ft.? Ignition reliability is the most important thing to be considered in aeroplane flights. Count de Lambert chose the Eisemann magneto for his equipment, after long experiment and investigation, as being the one he could depend upon under most trying conditions. Throughout his entire trip of 31 miles from Port Aviation, Juvisy, to the tower and back, which his Wright biplane covered in the fast time of 49 min. 39 2/5 sec., the ignition was absolutely perfect. The motor did not miss a single explosion, thanks to the quality of the spark produced by the Eisemann.

Miss E. L. Todd, who completed some time ago a biplane which is now at Mineola undergoing the change from double propellers to a single one and other minor alterations, has obtained the services of Hugo C. Gibson as consulting engineer. Among the results now looked for are development of propeller thrust on a line running through the center of buoyancy while keeping the center of gravity low and absorbing the thrust equally on the main planes.



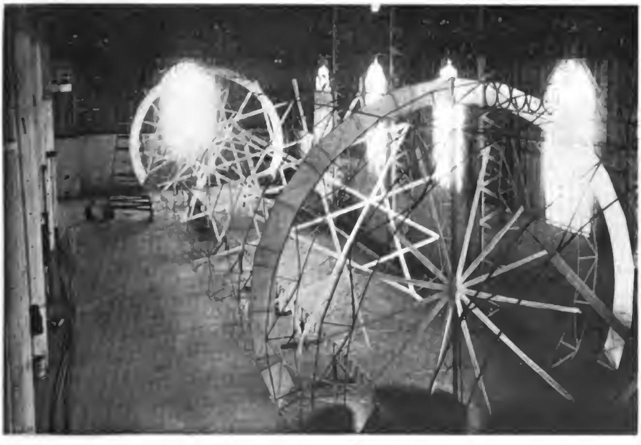
The Van Anden Aeroplane

Rings a Cane While Flying?

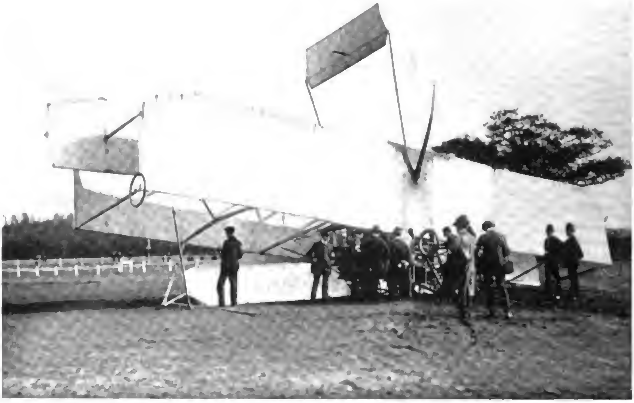
The Galveston News publishes a most startling interview with Col. E. H. R. Green, of Dallas, who was present at one of the flights made by Charles F. Willard at Mineola.

Following is the actual quotation of Mr. Green according to the above newspaper:

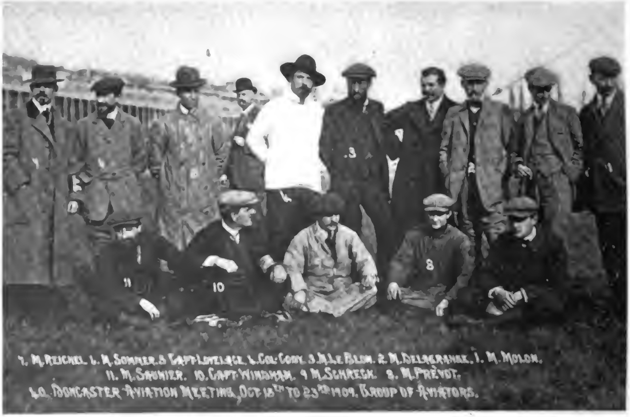
"'Now, some gentleman stick up his cane in the ground,' said the aviator. 'A lady has already given me a bracelet.' The aviator had descended from a height of 50 ft. and the machine hung stationary about 12 ft. above the ground. A cane was stuck in the ground. The machine flew about in a circle gracefully, and Willard dropped the bracelet over the cane. When the machine came to the ground it dropped so lightly that the silk planes did not even flutter."



The Preble Airship Frame



Cody's Aeroplane Just As It Turned On End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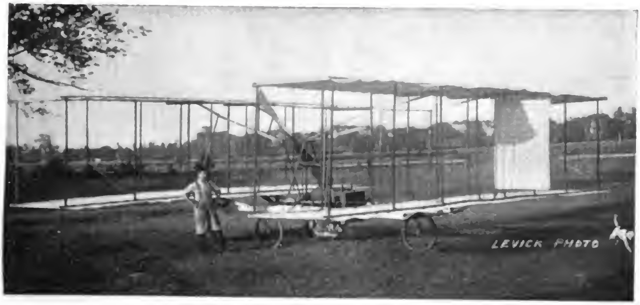
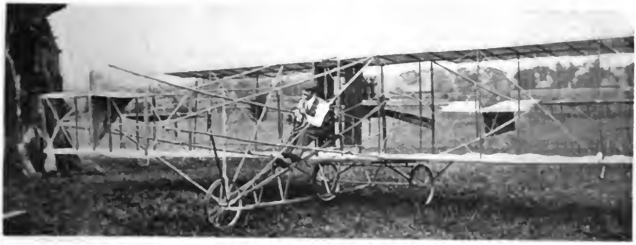
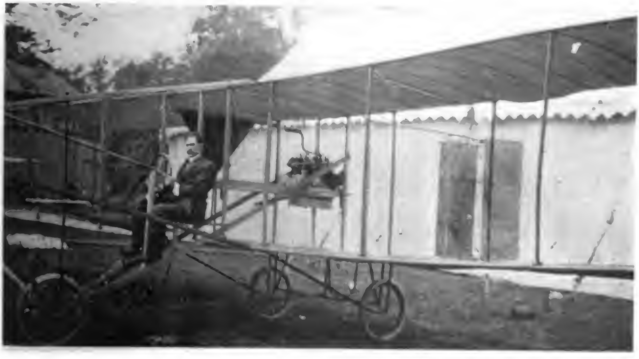
11. M. Saunier. 10. Capt. Windham. 9 M. Schreck. 8. M. Prévot.
60. Doncaster Aviation Meeting, Oct 15th to 23rd 1909. Group of Aviators.



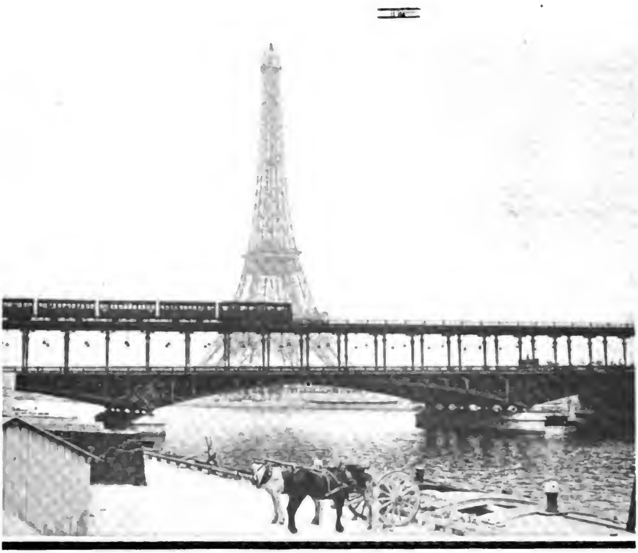
Walden Biplane before the Wreck



The Raiche Machine



A. J. Smith in the Brauner-Smith Machine



Comte de Lambert Circling the Eiffel Tower, in His Epoch-Making Flight in a Wright Machine

FOREIGN LETTER

Lambert Flies Over Paris and Around Eiffel Tower—Farman makes Two New World Records—Paulhan Makes Three-Hour Flight at Brooklands—Maurice Farman on Hour Flight Cross Country—Baroness Successful Aviator—Wright Suits in France—Experimentor Wins $10,000 German Prize—Moore-Brabazon Wins $5,000 "Daily Mail" Prize.

Algeria.

A Frenchman, F. Kaspar, has made short flights at Algiers with an aeroplane of bamboo and steel tubing. A 35 h. p. E. N. V. engined-Voisin has been purchased by a M. Metrot, who will fly it at Algiers.

Argentine.

An aero club has been organized in the Argentine, S. A., and has ordered a Bleriot monoplane.

Austria.

On October 23 the Viennese had their first sight of an aeroplane in actual flight, and an estimated crowd of 300,000 assembled to see Bleriot make two flights of 22½ and 17 min. each. Bleriot was afterward presented to the Emperor. The next day Bleriot left to fly for the King of Roumania.

RENNER AIRSHIP.

October 16 saw the first trial of a new airship built by Anatole and Alexander Renner, called "Estaric I." The whole affair is almost identical with the U. S. government Baldwin dirigible. The triangular framework runs nearly the entire length of the bag, the propeller is in front, and in the center of the framework is an open place for the navigator and the engine. There is the same rear vertical rudder with a horizontal surface at right angles to it, but the forward horizontal cells are left off. The side suspension system is used to hang the ash frame of 250 kg. weight from the Continental cloth bag, which measures 32 meters in length, 6 m. diameter, volume 700 cu. m. (24,720 cu. ft.). The Puch motor, a 4-cylinder of 24-28 h. p., weighing 80 kg. (176 lbs.) drives a 1.8 meter diam. steel propeller. Ordinary coal gas was used for inflation. A shifting weight is used for steering up and down. On October 16 and 17 it was operated for the Emperor at Vienna.

The three dirigibles purchased by the government, a Parseval, a Lebaudy and a Clement-Bayard, will be delivered soon.

An engineer of Vienna has invented an "aerial torpedo" to hit dirigibles at 3,000 ft. altitude.

Belgium.

The Astra company of France has completed for the Belgian government a new dirigible, the "Flandre," of 6,500 cu. m. capacity. A $1,000 prize has been offered for a flight from Brussels to Antwerp, some 25 miles. Other prizes are being put up.

At a flying exhibition at Antwerp the last of October, Baron Caters and some of the minor flyers made some short flights. De la Vaulx gave exhibitions with a Zodiac airship.

England.

PAULHAN MAKES GREAT RECORD.

The motor racing association which runs the Brooklands course booked Paulhan and his Farman machine for a series of flights October 28—November 1, and under adverse conditions made a great showing, making new English records and beating his own personal record. The grounds were flooded in sections. The track is bounded by iron fences, and motor cars were driven on the track while Paulhan was flying.

On October 30 made a flight of 58 min. 57 sec., as well as a shorter one. No official judging was done of his high flight, but conservative estimate places it over 500 feet.

THREE-HOUR FLIGHT.

On November 1 he made the flight of his life. He remained in the air for over two hours and fifty minutes, descending for lack of gasolene after 96 miles had been covered. Various shorter flights were made, and on several occasions he took up passengers.

BRABAZON WINS $5,000 PRIZE.

On October 30, J. T. C. Moore-Brabazon won the *Daily Mail* $5,000 prize at the Aero Club's Shellbeach grounds. The prize was for a circular mile by a British aviator on an all-British machine. The flight was officially measured as 1¾ miles, and lasted 2 min. 35 sec.

Moore-Brabazon first had a Voisin machine, but this month, October, received delivery of the aeroplane made for him after the style of the Wright by the English balloon builders, Short Bros., and made several short flights up to 400 yards.

The Hon. C. S. Rolls got his motor fitted to his Wright aeroplane the first part of October, and made one or two satisfactory short flights at Shellbeach. A slight accident occurred. Starting off the rail at too steep an angle, Mr. Rolls cut out the spark and landed on the right wing. On November 1 a mile was flown.

England is developing a fine crop of experimenters, and one would think from the advertisements in aero journals that aero touring has long been an accepted fact. A number of the machines built have made short flights.

The subscriptions to the National airship fund now amounts to $56,100.

Egypt.

An aviation meet is to be held at Cairo in January near the Pyramids. A special prize of $10,000 is offered for a flight with a passenger from Cairo to Suez and back.

France.

The two very biggest events of the past month in France were the spectacular flight of De Lambert around the Eiffel Tower (see elsewhere this issue), and the new world's distance and duration record set up by Henry Farman.

FARMAN MAKES NEW FRENCH PASSENGER RECORD.

On Nov. 1, at Chalons, H. Farman made a 40-minute passenger flight, and then one of 1 hr. 16 min. 35 sec.

OVER FOUR HOURS IN THE AIR—TWO NEW WORLD RECORDS.

On November 3, at Mourmelon, Farman surpassed in distance and duration his own new world's record made last August at Rheims (180 kil., 3 hr. 4 min. 56 sec.) by staying in the air for 4 hr. 17 min. 53 sec., and covering more than 232 kil. (144 miles), and may be considered to have won the Michelin prize and trophy for 1909 unless this is again beaten by December 31.

The Fernandez biplane made its first flight the early part of October. The running gear and the vertical and horizontal tail is a copy of Curtiss. The planes resemble the Wright, and the front horizontal rudder is similar to that of Farman.

Countless flying machines of all sorts are daily undergoing trials and repairs, and out of the many we hear of only a few doing any real flying. The exhibition flights of Farman, Paulhan, Sommer, Rougier, Latham, Lambert, and the few stars of lesser magnitude, so far eclipse the flights of the experimenters that the latter are lost to public notice. The centers of industry are at Chalons, Port Aviation (Juvisy), and at Issy.

Wheels have been fitted to Baratoux's Wright, as well as to Schreck's, to entire satisfaction.

MAURICE FARMAN ON LONG CROSS-COUNTRY FLIGHT.

Maurice Farman, brother of Henry Farman, jumped to the front ranks last month, on the 12th of October flying across country, passing several towns, in a flight of 10 kilometers, about. On the 19th he made another cross-country flight, during which he made four circles of the country around Buc, remaining aloft for 55 minutes.

His machine closely resembles his brother's, but it was built by Mallet, the balloon builder. Following are the principal points: Biplane, 10 meters spread by 2 m. length, spaced 1.5 m., varnished cotton surfaces; two horizontal surfaces in rear, 3 m. spread by 2 m., with a vertical rudder; single horizontal plane in front, 4.9 m. by 0.9 m.; 40 h. p. 10 cyl. R. E. P. motor and 8 cyl., 58 h. p. Renault have both been used; Chauviere propeller, 2.5 m. diam. by 2.5 pitch, in rear of surfaces; weight without motor, 270 kg.; add 80 kg. for Farman and 100 kg. for R. E. P. motor, or 17.8 kg. for the Renault.

PAULHAN CHANGES MOUNT AND FLIES HOUR.

Paulhan, who has been flying Voisin machines, has gone over to the Farman, which he flew at Blackpool. His first flight in a Farman was made at Chalons, and lasted over an hour.

Students of the well known machines are progressing fast, and many cyclists and chauffeurs are taking up aviation.

The French government airship Liberte has had wood propellers with light metal rims fitted in place of the old steel ones, and new double surface horizontal rudders, one on each side of the car. The bag is to be divided into compartments, with a very small hole at the center of each partition.

The Ville de Paris is to have the same change made.

THE FIRST WOMAN AVIATOR.

For some time Baroness de la Roche had been learning on a Voisin. On the 22nd October she took the wheel for the first time. The initial flight was only about 300 yards, but on the following day she flew twice around the grounds at Chalons in a gusty wind, covering about four miles.

WRIGHT SUITS IN FRANCE.

Suits are being brought by the General Society for Navigating the Air against the manufacturers of sixteen aeroplanes—Farman, Bleriot, Antoinette, R. E. P., Santos-Dumont, Clement-Bayard and others, for infringement of Wright patents. Farman says: "Flexing planes are not patentable and, further, were used long before the Wright Brothers turned their attention to aviation."

NEW AERO FEDERATION.

The Federation of Aeronautical Societies of France was formed the last of October by fifteen Aero organizations in France, which were not affiliated with the Aero Club of France.

The Col. Renard airship, which was so in evidence at Rheims, is undergoing trials under supervision of the government at Verdun.

Bleriot has selected Pau for his aeroplane factory and "college." Tissandier and Count Lambert will use Pau also for instruction on Wright machines.

New prizes are being offered all over France by newspapers, individuals and syndicates, and the total is enormous.

A motion has been put before the Chamber of Deputies for $4,000 to provide aeroplane landing places in various parts of the republic to encourage aerial touring.

Germany.

Herr Grade has steadily improved with his little monoplane, being able to fly for over 11 min. a distance of about 13 kil., near Berlin.

GRADE WINS $10,000 PRIZE.

On October 30 he won the Lanz $10,000 prize, by flying, with an all-German machine, a figure "8" around posts a kilom. apart. The wind blew 8 m. a sec. The time was 2 min. 43 sec. Other short flights were made up to 13 min. Grade is the only German flying a German machine.

WRIGHT PUPIL FLIES LONGEST OF ANY GERMAN.

On October 18, Captain Engelhardt's assistant, Keidel, had an accident with the Wright machine, but escaped unhurt. The machine was wrecked. On the 29th Captain Engelhardt, Wright's pupil, flew for 44 min. 30 sec. at Potsdam, and on the 30th for 1 hr. 6½ min.

The German air is constantly filled with dirigibles. The Zeppelin has been working with wireless, the Ruthenberg got a prize at Frankfort exposition, the Zeppelin I, Parseval II and Gross II conducting manœuvers, and the Parseval III, taking up the Grand Duke of Hess and Prince Henry of Prussia.

Germany is preparing to find out to just what practical use airships may be put, for which a series of severe experiments will take place during November at Cologne. The three airships to be tried are:

Zeppelin II	Rigid
Gross II	Semi-rigid
Parseval II	Non-rigid

Orville Wright's last flight in Germany occurred on October 15, the day before he left for Paris on his way to the States. This was a spectacular one of 20 min. duration in the presence of the Kaiser, the "Mrs. Kaiser," and Princess Victoria Louise. Wright made swoops and dives, and soaring high, showed royal blood what 'twas to fly. On leaving, the Kaiser gave Miss Katherine Wright an autograph portrait of himself.

Hungary.

Bleriot made three flights at Buda Pesth on October 17 before a huge crowd, one being of 26½ min. duration. At the conclusion of this Archduke Joseph led him to the royal box and presented him to the Archduchess.

Indo-China.

A syndicate of the municipality of Saigon has bought a Bleriot and founded an aero club.

Italy.

On October 13 the Italian military airship traveled from Bracciano to Rome, took Col. Morris aboard, and returned to Bracciano. On the 21st it went over the Mediterranean, touching at various aerial points on the way to the Island of Monte Cristo, about 30 miles at sea,

(Continued on Page 244)

AVIATION MEETS RAGE ABROAD

LAMBERT CIRCLES EIFFEL TOWER.

Delagrange Makes New Speed Record.

LATHAM FLIES IN GALE.

Paulhan Makes Great Flight—3 Hours.

The Juvisy Meet.

LAMBERT FLIES AROUND EIFFEL TOWER.

Even more startling than Wright's trip up the Hudson was Count Lambert's flight across part of Paris, from the Juvisy flying course around the Eiffel Tower and back in a Wright aeroplane on October 18, during the Juvisy meeting. The distance as the bird flies is about 21 kil., and with the return trip and two turns of the course the total is 48 kil. (29.82 miles), and the height attained was 400 meters (1,312 feet). The flight took 49 min. 39 2-5 sec., a speed of 36 m. p. h. Thus Wright's first pupil out-Wrights him. The Aero Club of France has awarded him its gold medal.

Paris has been particularly favored with facilities for viewing the wonderful advancement of mechanical flight, and never more so than now, with its great flight-course "Port Aviation" at the suburb of Juvisy. The meeting began on October 7th, and lasted until the 21st—fifteen days, and a dozen aviators took part. There was some flying every day but two, when the weather was prohibitive.

Only short flights were made until Sunday, the 10th, when, in the presence of an enormous crowd which demoralized the lack of transportation facilities, Paulhan and Lambert were the star performers, Paulhan in his Voisin going eight turns of the 2-kilometer course (1.242 miles), covering nearly 22 min., and Lambert for 7 circuits in 15½ min. More short flights followed on Monday, and on Tuesday Paulhan kept going for 13 rounds, 26 kil., in 32:50 4-5. He continued until he had made 39:1 4-5.

Nothing startling happened the next day; Latham tried his first flight of the meet and broke a wing. The remaining days provided nothing better than has been recorded above, with the exception of the cross-Paris flight of Lambert, by which the meet will be known to fame, and a 33 min. flight by Bregi. After circling round the course and rising to a height well over 350 feet, Lambert flew outside the grounds and was lost to sight. The crowd thought he had gone for a little cross-country flight, but as time passed anxiety grew until he was sighted coming back. He was accorded a tremendous ovation, in which Orville Wright, who was present, joined, when it was learned what he had accomplished. It is a curious coincidence that just eight years before, plus one day, Santos Dumont startled the world by sailing his dirigible around the tower.

Sensation after sensation is the order of the day.

RESULTS.

Paris Municipal Council Prize (for the best time for a circuit of the course, passing under a wire 8 meters above the ground and then rising over a balloon 40 m. altitude).—1st, $3,000, Lambert (Wright), in 1:56 4-5; 2nd, $400, Paulhan (Voisin).

Seine General Council Prize (fastest speed for five laps).—1st, $1,400, Lambert, 10:13 4-5; 2nd, $600, Jean Gobron (Voisin), 10:45 2-5; 3rd, $400, Henry Bregi (Voisin), 11:40 2-5; 4th, Louis Paulhan, 13:37 4-5. Various other prizes were given, in all $8,980, Lambert winning $7,269, Gobron $1,069, and Bregi $641.

Blackpool.

On October 18 the aviation meeting at Blackpool, under the sanction of the Aero Club of Great Britain, was formally opened. While on a much smaller scale, the arrangements were similar to those at Rheims, the same code of signals and markings being used. The course, laid out on a flat plain along the seashore, was quadrangular in form marked by four corner posts. The lap was 1.986 miles in length. Bad weather generally prevailed and many were the disappointments, but it was financially a success. Among the competitors were Farman, Paulhan, in a Farman machine; Latham in an Antoinette; Rougier and Fournier (Voisin); Fernandez in his own machine; Leblanc (Bleriot); A. V. Roe (triplane; M. Singer (Voisin), and several English would-be aviators.

The weather on the opening day was ideal, and Farman, using the machine he recently sold to Paulhan, his own machine being on a freight train somewhere between Berlin and Paris, made the initial flight of the meeting. He covered a round or two making the first officially controlled flight in England, and was followed by Paulhan on the same machine. After this Farman again mounted the machine and flew for 23 min. While he was still circling the course, Rougier on his Voisin started on a 32 min. 27 sec. trip, thus affording the spectators the opportunity of seeing two machines in the air at once. Paulhan then went aloft for a 26-min. spin, and later Farman took Paulhan with him for a fly. The public was very enthusiastic and seemed to appreciate the high flying of Rougier and Paulhan much more than the low monotonous circuiting of Farman.

The next day, October 19, the winds blew and the floods came, but Latham, who had arrived the previous day, ventured forth on his Antoinette and had few tiffs with the wind gusts. Finally he suddenly dove down, and in landing broke a wheel and propeller blade. He was followed by Rougier, who found the atmospheric conditions so disturbed that he soon quit. The side vertical planes proved of good service in enabling the wind to blow him sideways.

Paulhan, however, seemed to have more courage, and starting off, he immediately rose to a great height in a measured wind of 15 m.p.h., and stayed up for 32 min. 17 4/5 sec. At the end the wind was 22 miles an hour.

ENGLAND'S DURATION RECORD.

On Wednesday Farman created the duration record for England by staying in the air for 1 hr. 32 min. 16 4/5 sec., traveling 47 miles 1,184 yards. Parkinson's Bleriot machine, Singer's Voisin and Fournier's Voisin made "fledgeling" hops. Rougier then made three rounds for a slow speed prize, the slowest round being made at 27.257 miles an hour. Paulhan then came out, but the wind was blowing at 24 miles and he only completed half a circuit. Before the close of the day Roe and Fernandez made some ineffectual attempts to get off the ground.

Thursday, all day a wind of 40 miles per hour kept conditions so precarious that flying was out of the question. The only interesting event in the day's proceedings was a dynamometer test of the tractive pull of Latham's propeller.

On the next day the weather moderated a little, but the wind still blew at 25-45 m.p.h. The spectators were few and hardly expected any flights, but to their surprise a little after midday, while the wind was whipping and lashing flags on their staffs, Hubert Latham came out on the course.

FLIES IN A GALE OF WIND.

Few believed that Latham possibly could fly or control his machine in such a high wind. At the first start the wind damaged one wing, but in spite of this he tried again and got slowly up. Latham with superb skill and mastery could be seen working the control levers, now warping, now elevating, now turning, until it seemed to the spectators as if they could actually see the invisible whirls and eddies of the aerial ocean. He was actually tossed about like a cork and spectators called to him to come down. The flight lasted in all 10 min. 15 sec., and at times when heading against the wind, which reached 40 m.p.h. during the flight, the Antoinette actually flew at 5 m.p.h. with respect to the ground. This exhibition of nerve, daring and ability made every man's heart stand still and is unparalleled in the history of aviation. This is the thing that will make aeroplaning other than a "fair weather sport." His slow average speed, 21.65 m.p.h., is significant.

On Saturday, October 23, and Monday the 25th, the last two days of the meeting, the weather was so bad that the inglorious ending of "no flights" ensued.

The prizes and awards were as follows:

The Blackpool Distance Grand Prize, $10,000 won by Farman in 1 hr. 32 min. 16 4/5 sec., distance 47 miles 1,544 yards; second and third prizes of $3,600 and $1,400 went to Rougier and Latham respectively.

Daily Sketch Prize, $2,000, for Speed over three laps, was won by Farman; speed 36.38 m.p.h. Paulhan (Farman) second; Rougier (Voisin) third.

Manchester Guardian Prize for Slowest Circuit—cups and cash, won by Latham (Antoinette); speed 21.65 m.p.h.; Paulhan (Farman) second, 28.9.

Prize for General Merit of $1,500, $750 and $250, won by Latham for his flight in a wind of 28-40 m.p.h.; Paulhan second for flight in 15-23 mile wind; Rougier third.

Prize for Assistants, $250 for greatest number of circuits. Won by Rougier; Paulhan second.

Total value of prize money was $20,750, plus a $500 cup, and the total distance flown about 116 miles. A. V. Roe made two short flights of 20 yards in his triplane. Singer and Parkinson did not leave the ground.

Doncaster.

Not to be outdone by meetings in other parts of the country, the municipal sportsmen of the Yorkshire town of Doncaster, after much friction with the British Aero Club, finally succeeded in having their flight gathering on the hexagonally-shaped Town Moor take place October 15-25. The flying field was not very large, being only 800 yards the longest way and 1½ miles around, but the ground was good and very level.

The only men to fly were Cody, Delagrange, Molon and Le Blon in Bleriot monoplanes, and Sommer in a Farman. The other competitors, Schreck (Wright), Lovelace (Bleriot), Prevot (Bleriot), and Saunier (Chauviere), doing nothing more than run around on the grass.

The weather for the week was bad, flying being possible at Doncaster only six days, and the meet was extended two days over the advertised week.

On Friday, October 15, the opening day, Cody made a spin on the ground but did not fly. The wind disabled Capt. Windham's machine and nothing flew.

The next day, however, saw some real flying. Cody was the first up, but after flying around the course he ran on the ground a short distance and the front wheel suddenly dug into a soft place, causing the machine to turn turtle and it was out of business for three days. Cody was fortunately unhurt. Cody had bad luck all the week, his 80-h.p. E. N. V. motor working very badly and continually misfiring.

CODY NOW A FULL-FLEDGED BRITISHER.

Cody publicly signed his naturalization papers for which he applied some time ago during the Doncaster aviation meeting, the bands playing "God Save the King" after Cody had taken the oath of allegiance before the town clerk of Doncaster.

Sommer, Delagrange, Molon and Le Blon made short flights, but it was very risky in the wind. In a lull Delagrange, in his 7-cylinder Gnome-engined Bleriot, circled the course several times in contest with Sommer, Delagrange winning the Inauguration Prize.

Sommer took up several passengers, each for a short run. Twenty-three flights were made on this day.

Monday, the 18th, a large attendance was attracted to the grounds, and were rewarded by a fine flight by Le Blon on his Bleriot lasting 30 min. 4 sec. Sommer also came out for a 25-min. flight and was followed by Delagrange for two rounds. Molon landed in sand and the machine turned over.

FLIES IN THE RAIN.

A wind blew up on Tuesday, but Le Blon made a 20½-m. trip in the bad wind and rain. Delagrange, Sommer and Cody made shorter flights.

Captain T. T. Lovelace made his debut as aeroplane driver for Ballin Hinde's Bleriot, but did not leave the ground.

It was still more windy on Wednesday, and Le Blon, Delagrange and Cody made short runs. The wind was very treacherous and none of the aviators except Sommer seemed to be able to handle it. Sommer towards evening made a brilliant flight of 9 min. duration. Lovelace was out running up and down.

Thursday, Friday and Saturday were very disappointing. The weather was so bad that no flying took place to speak of. Saturday saw a short flight by Lovelace, which ended in a smash. A Voisin machine fitted with two gyroscopes made an appearance only, as did the Chauviere machine with reefable planes.

On the following Monday, however, October 25, several flights were made. Sommer, Delagrange and Cody made successive short flights, and in the afternoon Le Blon started off on his Bleriot. He was soon caught by the wind, and in a most exciting manner the machine was blown towards the grand stand. Le Blon, by great skill, narrowly avoided crashing into the spectators, but badly damaged the machine.

NEW WORLD'S SPEED RECORD.

Sommer opened the proceedings on the last day, October 26, covering 20 laps in good form. Delagrange then tried for speed, and succeeded in covering one lap in 1 min. 47 sec. The speed was 49.99 m.p.h., a new official world's record.

Molon covered three rounds, but was slower than Delagrange. A little later Sommer started out on the last and best flight of the meeting, covering 29 miles 1,575 yards in 44 min. 53 sec., and this concluded the meeting. Schreck, in his Wright machine fitted with spring wheels, in addition to skids, did nothing during the meet.

The loss sustained by the promoters came to about $40,000.

FINAL RESULTS.

Whitworth Cup (for best aggregate distance on October 26), won by Sommer with 38 miles, 1,580 yards.

Doncaster Cup (for greatest aggregate distance of meet), won by Sommer, 136 miles, 280 yards.

Tradesmen's Cup (for fastest circuit, 1 mile 860 yards), won by Delagrange; time 1 min., 47 1/5 sec.

Chairman's Cup (best time by biplanes for five circuits), won by Sommer in 12 min. 27 3/5 sec.

Great Northern Railway Cup (best time for ten circuits); the Leeds prize and several other prizes were not won.

Frankfort.

At Frankfort, October 3-11, De Caters for the City of Frankfort Prize won first, $10,000; Bleriot second, $2,500, for the duration prize. The Krupp $2,500 prize for an obstacle race was awarded to Bleriot; second, $1,250, Caters. Five kil. speed competition, $600, won by Bleriot; second, $400, Caters.

Latham, Rougier and M. Nervoe in a Voisin made short flights, and Bleriot covered 60 laps in 1 hr. 12 min., and Baron de Caters 54 laps in 1 hr. 17 min., thus making a longer and at the same time a shorter flight than Bleriot.

OVER AND UNDER WIRES.

For the Krupp prize competitors were asked to fly under and over three wires at a height of 15 m. and separated by a distance of 200 m. Rougier flew over the Parseval airship.

Spa.

Delagrange, Le Blon, Sommer and Paulhan took part in the Spa meet, September 23-October 2, with the following results:

Aggregate duration — First, Delagrange (Bleriot), 1 hr. 2 min. 2 2/5 sec.; Sommer (Farman), 58 min. 32 3/5 sec.; Le Blon (Bleriot), 46 min. 33 1/5 sec. Le Blon made the longest distance in one flight, Sommer attained highest altitude and Delagrange the greatest speed. The Zodiac III dirigible was up for an hour on October 2.

Cologne.

In the Cologne meet, September 30-October 6, were engaged Bleriot, Paulhan, Delagrange, Bregi, Prevot and Dufour. Bleriot was the phenomenal flyer, making a personal record of 1 hr. 4 min. 56 sec. He covered 60 measured kils. in 55 min. Paulhan (Farman) was next best with 37 min. 32 sec.

Instruction in Aviation.

"Mother, may I go out to fly?"
"Oh, yes, my darling daughter;
But do not go too near the sky,
And when you fall, hit water."

—*Mother Goose Up to Date.*

REAL WORK AT MORRIS PARK

By Ada Gibson.

IF there are still any skeptics floating around in regard to the flying machines becoming a commercial success, I would suggest that they make a short visit to the Morris Park race track, the headquarters of The Aeronautic Society, then if they still cling to the idea that the "man in the street" will never float above the bathers at Coney Island, I am sure they have the sympathies of a majority of their fellow-creatures.

Anyone who has visited Morris Park during the last weeks could not fail to be impressed with the calm, level-headed and systematic working of the enthusiasts to be found there.

One particularly notices the absence of the "crank" who was with us for so long a period in the beginning of the automobile era.

Every member at Morris Park has got down to solid hard work in the matter of solving the numerous problems which continually crop up, and while all are aiming for the same goal, that of "getting up in the air," not one seems to be there "prematurely," for one finds the owner and builder of the machine ever ready to discuss the advantages as well as the disadvantages of his machine.

Flying has become an accomplished fact. The honors have been given out, and now these clever, keen business men are working to assist the progress of the heavier than air machines, and hasten the time when chaperoned lovers "stealing kisses behind a cloud," will have ceased to be a "pipe dream," and flying will have ceased to be the recreation of the millionaires only.

At the present time there are at least eight aeroplanes at Morris Park nearing a state of completion, all of which are able-looking creations, and certainly point to the fact that there will be "something doing" in the near future in the manufacture of aeroplanes.

In fact as in the instance of the evolution of the automobile as a commercial success, so history will repeat itself in the case of the "Air Machine."

Greene Aeroplane Carries Passengers.

November 15.—Dr. William Greene, who is probably the first to take a 320-lb 26 h. p. stock automobile motor off the ground, has made 31 short flights in the last three days, up to 600 ft. This was with the biplane he has just completed. On the second day he took up Leo Stevens, the balloon builder, and also two others, on other flights. Yesterday he had to run the machine into a fence to avoid running down a man with a baby.

WINS TWO PRIZES.

During these flights he won the Triaca prize of $100 for flying 100 meters and the Stevens Cup for the first man to carry a passenger. The whole machine gets in the air within 50 ft. of the standing start. About 80 pounds of sand in bags was attached to the front control to overcome the weight of the motor which is too far to the rear.

Brauner-Smith Aeroplane Flies.

On Nov. 1 the Brauner-Smith biplane was partly wrecked during the course of its first trials. It was built by two members of the Aeronautic Society, Pincus Brauner and A. J. Smith and was the second machine to have been built and flown by members at Morris Park.

Brauner was at the wheel and made one good short flight. At the next trial considerable speed was attained on the downgrade of the track and though 50 or more pounds of brick tied in a bag had been hung out in front near the front wheel to counterbalance the weight of the motor which was placed too far to the rear, the machine went up at a very steep angle. Brauner quickly shut off power and the machine seemed to slide backwards after loss of headway and landed on one wheel. This buckled the running gear and let the lower plane down heavily on the ground, breaking several struts and the central section of the under surface.

EARLIER TRIALS.

On Oct. 28th the machine had its very first try-out. Dr. William Greene installed his American & British stock automobile motor in the machine and made a short flight. Some little damage was done in landing which was repaired. Brauner and Smith also ran the machine up and down the track before Greene got in. With the 6 ft. propeller which Brauner had cut out in a hurry after several tests on the engine and numerous parings down with a draw-knife gave a pull of 210 lbs.

DESCRIPTION OF APPARATUS.

The aeroplane very much resembles the Curtiss aeroplane. It has a spread of 35 ft., and the two surfaces, 5 ft. 6 in. deep, are placed 5 ft. apart. A double surface vertical rudder, measuring 5 ft. by 2 ft. 3 in., each surface 2 ft. apart, is hinged about 9 ft. from the rear vertical struts. The two surface front rudder measures 8 ft. by 2 ft. by 2 ft., and is pivoted about 10 ft. from the front vertical struts. This front rudder tilts up and down by the pulling back and pushing forward of the steering wheel respectively. By turning the wheel to the left or right, the rear vertical rudder is operated in accordance, through the cable which runs around the wheel, down to pulleys on the framework near the operator's feet, along the skid in the center, crossing then to a cross piece on the rudder. Heavy Bessemer steel wire, No. 18 gauge, is used to stay the structure. These stays are tightened by turnbuckles made of small steel tubing threaded and turning up on right and left handed threads cut in the steel wire.

The propeller is 6 ft. in diameter and the inventors state the pitch as 4½ ft.

The wing tips, operated the same as in the Curtiss machine, by a movement left or right of the operator against the hinged back to the seat. These measure 5 ft. 6 in. by 2 ft.

The whole is mounted on a three wheeled chassis, running on 2½ in. double clincher tires. The rear wheels are arranged with spring shock absorbers.

OTHERS MAKE PROGRESS.

The Lindsay machine has at last secured a motor and no doubt will try to do something before very long. Dr. William Greene is putting the finishing touches to his big biplane and by the end of November is expected to either be flying or in the junk heap. Frederick Shneider, whose original and rebuilt biplane has been described and illustrated in this magazine, will soon assemble his second entirely new machine, the planes and other parts of which have been completed for some time. The Lawrence biplane is still awaiting its motor.

W. Diefenbach is quietly making rapid progress on a biplane of 45 ft. spread. Outside of the planes, steel tubing is being generally used. This machine should be ready for trials in December.

Riggs Airship.

November 10.—The biggest airship in America will be that of John A. Riggs now practically completed at the grounds of The Aeronautic Society at Morris Park. Mr. Riggs states that he has leased the manufacturing rights from the Hot Springs Airship Co., and is financing the work which has been prosecuted with rapidity under the direction of Joel T. Rice, the inventor of the plan.

A varnished bag of a special high grade cotton 100 ft. in length with a diameter of 25 ft. has been built by A. Leo Stevens to contain 35,000 cu. ft. At the top in the center is a safety valve. In the bottom of the bag are sight holes for observation of the inside of the bag. Underneath the bag is a reserve receptacle to take the surplus of gas through expansion. The bag is encased with Italian hemp netting and is expected to lift 1550 lbs. over and above its own weight.

The car is made entirely of Shelby seamless steel tubing. The longitudinal members are ¾ in. diameter and the vertical and other stay braces are ½ in. The length is 87 ft. long. The cross section is in the form of a rectangle, 2 ft. wide by 5 ft. high. The top of the rectangle is extended out each side making a width of 10 ft., so that the cross section is in the shape of a "T." This framework, with passenger car, motor, propellers, etc., weighs about 1000 lbs.

At the extreme front end is a 6 ft. wood propeller, 3 ft. pitch. This is mounted so that it turns from right to left, or vice versa, in a horizontal arc, giving the same effect as the steering wheels of an automobile. This is intended to steer, or rather "pull", the ship in the desired lateral direction. All rudders are dispensed with. This propeller is driven through bevel gears at about engine speed. It is moved at the will of the operator by wire cables from the operator's seat to a chain running over a sprocket on a short vertical shaft at the other end of which is a pinion meshing with a quadrant, which does the steering.

Placed 7 ft. behind the front propeller, one on each side, and 12 ft. apart, are two similar propellers, arranged to swing in a vertical arc, in order to provide for ascent and descent. These are driven by a cross shaft at the same speed as the front one and may be operated independently or in unison with the front propeller.

Twelve feet back from the center of the framework is placed the 8 cyl. Curtiss, air cooled motor of 34 h. p. This drives the main power shaft by a chain running over sprockets. A large leather faced cone clutch is introduced just forward from the engine.

The gasolene tank is placed at the point where the ship balances so as not to throw out of balance due to usage of gasolene.

The engine and accessories are placed in what might be named a "car" consisting of a framework built out 2½ ft. on each side of the main longitudinal frame and extending 8 ft. in length. There is room for two men on each side of the motor. From this car to the extreme rear end, the frame tapers to a point 2 ft. square. A special light Splitdorf three cell battery and coil are employed for the ignition.

The various lengths of tubing in the frame are joined by 3-way and 6-way aluminum allov fittings; and in the long rods couplings are used, with the ends of the rods sweated in and fastened with split pins.

Walden Machine Wrecked by Wind.

The Langley-like-looking biplane of Dr. H. W. Walden which has been completed for some time and had its trials at the Morris Park grounds of The Aeronautic Society has been wrecked completely by the wind. The machine for some weeks has been out of doors between two of the aeroplane sheds, with only the engine covered by a canvas. During the night the wind overturned the machine and it is now a mass of sticks and wires.

CLUB NEWS

The **Aero Club of New England** has elected to membership the youngest member on record, Phillip John Fitz-Gerald, eight years old, who recently made an ascension in the balloon Boston from Fitchburg. It will hold its annual banquet on Nov. 22, at the Boston City Club. A business meeting will be held previous to the hour of the dinner to consider the raising of the annual dues to $10 and to elect officers for the ensuing year.

Aero Club of Utah. At an enthusiastic meeting the Aero Club of Utah was formed during October. The meeting was held at the home of Wilton Powell, 259 South Third East street, and already more than 25 persons have joined.

The constitution of the Aero Club of America, with suitable changes and amendments, was adopted, as were also by-laws. Dr. A. Brodbeck was elected president of the club; Iver Redman, first vice president; S. S. Gilson, second vice president; Arthur Jennings, third vice president; L. R. Culver, treasurer; F. A. Ayres, secretary. Wilton Powell was named chairman of the membership committee and was instructed to start a campaign which will bring to the club every man interested in aviation in the state.

The club will meet again to further perfect the organization and outline the work for the fall. While the research will be chiefly along the lines of heavier than air machines, the matter of dirigibles will not be overlooked, and by next summer the club hopes to have a big machine in the air.

Affiliation will be asked for with the Aero Club of America.

The **Int. Aeroplane Club** of Dayton listened to informal talks and addresses at its meeting Oct. 27. Dr. L. E. Custer described a new device for registering the altitude of a balloon, invented by his son.

The **Aero Club of New Hampshire** has been formed by Charles J. Glidden at Manchester, N. H., drawing from the Calumet Club for members. Mr. Glidden was entertained by the Club and in return favored them with a talk on his ballooning experiences.

SUN COOKS EGG IN BALLOON.

Mr. Glidden told the following story, which, considering the author, could not for a moment be doubted. It was in Central Vermont that an eagle alighted on the balloon and laid an egg on top of the valve. The weight of the eagle caused the balloon to drop quite rapidly and the valve was opened to scare the bird away. This broke the egg and the warm sun cooked it to a nicety. It then slid down over the surface of the bag into the basket where it served as luncheon.

The **First Association of International Aeronautic Pilots** was organized on the 119th anniversary of the first ascension of man in a balloon in Boston, on Nov. 1. The object of the association is to encourage members of aero clubs to become navigators of air craft, and any person elected may become a member who holds a pilot's certificate issued by an aero club in the International Aeronautic Federation.

Invitations to join the association have been issued to nearly all well known pilots of this country.

Temporary officers were elected as follows: President, Charles J. Glidden; vice presidents, A. Holland Forbes and J. H. Wade, Jr.; secretary, Jay B. Benton; treasurer, J. Walter Flagg; advisory board and membership committee, Charles J. Glidden, A. Holland Forbes, Jay B. Benton, H. Helm Clayton, A. B. Lambert.

A second meeting will be held in Boston and the organization made permanent. There are at present about 250 aeronautic pilots in the world: 114 in France, 35 in the United States, 35 in Great Britain and the remainder in Germany and other countries.

The cost of gas, use of balloon and incidentals to become a pilot is about $750.

Club at University of Virginia.

An aero club has been organized at the University of Virginia for the advancement of the science of aeronautics, with the following officers: J. Rogers McConnell, of New York, president; Matt H. Murphy, of Greensboro, Ala., vice president; Stanford Gwin, of San Rafael, Cal., secretary; C. H. Sutton, Jr., of Richmond, treasurer; John Heath of the University of Virginia, consulting engineer. H. Cabell Claiborne, of Richmond, is chairman of the membership committee, while D. A. Hughes, of Dallas, Texas, and J. E. Patterson, of Kansas City, Mo., compose the lecture committee, and J. Lewis Underwood, of Birmingham, Ala., and Joseph Watson Beach, of Hartford, Conn., are members of the contest committee.

While the club itself is not well enough off from a financial standpoint to carry on any extensive experiments, it is doing what it can. John Heath, its consulting engineer, is bringing to completion a small glider which he is constructing in the mechanical laboratory. This glider is being built in conformance with some of the most modern ideas in aero-dynamics. When it is finished he will try it out, using as a starting place the top of the grandstand on Lambeth Field. Besides testing the efficiency of his biplane, he will be able to determine just how good a flying ground the university has.

It is the intention of the club to have as many lectures as possible at the university during this and subsequent sessions, and it is hoped that it may be feasible to have some aeroplane flights take place at the university also.

Aero Club for Cleveland.

Several meetings have been held in Cleveland preliminary to the formation of an aeronautical organization, but same has not yet taken concrete shape. H. C. Gammeter, inventor of the multigraph, is a moving spirit. Mr. Gammeter is thinking seriously of again taking up actual experimental work. Those who saw his ornithopter at the aeronautical exhibition in Grand Central Palace several years ago will remember the beautiful workmanship displayed.

ANNUAL MEETING OF A. C. A.

Aero Club of America. The annual election, or rather "meeting", as the Club prefers to have it called, the members having no right to vote but merely to express their "preference" for directors, passed off with unexpected quiet on Nov. 1, though for a moment it was feared that the active element which had named an opposition ticket would have a chance to speak a word on their side, and the dove of peace perches precariously on the rafters.

The old directors, who have held office since the end of the first year of the Club's existence, rallied their friends around the standard and presented an unbroken line of defence, while the attacking force was outpointed, albeit the tactics might be questionable.

Many of the members have been dissatisfied with the present control of the Club and at the election a year ago put up an opposition ticket and were defeated. This year another petition was prepared naming a new ticket 15 days in advance of the date of the election. Letters were sent out by the opposition calling a meeting, which was held at the Hotel Astor. A resolution was there adopted condemning some of the arbitrary actions of the present board. Communications were made to all the members setting forth some of the grievances and all members were urged to be present at the annual meeting. Those out of town were asked to sign proxies. In the meantime it was thought that the by-laws did not specifically provide for the use of proxies and the idea of obtaining proxies was given up and a temporary injunction asked for to restrain the voting of proxies at the election, which application was denied.

The Club sent out its own circular letters, beginning first by asking especially for proxies on the presumption that the members would not care to be bothered by coming to the meeting. The date of the election was not given in this letter nor was the club's ticket announced. At the eleventh hour a last letter was sent out by the Club asking the members to come in person or be present by proxy and express their preference.

The opposition named Alfred Wagstaff, Jr., Gutzon L. M. Borglum, William J. Hammer, Thomas A. Hill and Hon. James M. Beck for directors. Mr. Wagstaff's acceptance was obtained by telegraphing but on his arrival in New York he found he was on a ticket opposed to the old regime and refused to accept the nomination. As he had already once accepted and the ticket was printed and the petition filed, it was too late to actually withdraw and the opposition found itself voting for a ticket shy one man. The New York Herald took part in the controversy and printed an editorial which many call insulting and garbled the news.

On the night of the election, more were present by twice than ever before were in the Club. Two well-known members of the opposition, who had the week before been dropped from membership by reason of their dues not having been paid up to date, though no notice of such action had been sent them as provided by the by-laws, were not allowed in the room, and their proffers of the amount due refused. Another of the opposition it is said, was allowed to pay up and vote the Club's ticket. Strict surveillance of every one entering the room was maintained and a detective at the elevator door asked all comers as to their membership.

Reports of the president, secretary and treasurer were read and the polls declared open. No announcement of the club's ticket had been made up to that moment and even after the polls had been declared open a member had to ask what the Club's ticket was. The names of the old board were then read.

By using a glaring red ballot, the Club forced many friends of the directorate who were favorable to the cause of the opposition to vote for the Club's ticket for personal and business reasons. Prior to the opening of the polls, Hon. James M. Beck tried to obtain a hearing before the meeting. Another of the opposition was actually accorded the floor but had proceeded only a short way before he was cried down. It was impossible to obtain the privilege of speech.

An overwhelming defeat was met by the insurgents. Then, several resolutions were passed. One was to waive the by-laws and officially consider members all those who were on the books as members, irrespective of their election by the methods provided in the by-laws.

REFORMS PROMISED.

A law and ordinance committee was authorized to be appointed as provided in the by-laws, this committee to draft a new constitution and by-laws and reorganize in a satisfactory manner. The Club announced its intention of complying with the by-laws in the future and of making some of the changes sought by the rebel band.

FAIR OPPOSITION GOOD FOR PROGRESS.

The opposition to the "regular" ticket brought about a greater active interest in the Club's affairs, and the future will no doubt provide less cause for righteous criticism.

They say a certain amount of fleas are good for a dog, and certainly an organized opposition tends toward healthy conditions. No fair-minded man can rightfully object to the adhering to principles believed to be correct; the holding of different opinions is no cause for the casting of mud. Open discussion within reasonable limits should be the unhampered prerogative of every member and the elimination of personal venom is the duty of all.

DUES INCREASED.

At the annual meeting it was resolved, "that the annual dues of the members of this Club be $25 per year for resident members, and ten dollars for non-resident members. Non-resident members are those who reside more than fifty miles from the City Hall, New York City, and who have no office for the transaction of business within the limits of said city. This resolution shall take effect immediately."

The stockholders meeting has not yet been held, so that no officers have been chosen from among the directors.

LECTURE ON AERIAL LAW.

The first lecture of the season was given October 18th on "The Law of Aerial Navigation," by Lyttleton Fox.

Mr. Fox's talk was most interesting. He said that the legal questions which must arise as soon as aerial navigation becomes at all general are now of immediate and practical interest. Among these are problems arising as to the right of the aviator to fly over his neighbor's land, or make a landing upon it, his liability in case of damage done by objects falling from the airship, the extent to which violent means may be legally used to drive the aviators from lands over which he is trespassing, the respective rights and liabilities of aviators whose machines collide, the regulation of aerial traffic by law and establishment of rules of the road, etc. The right of the aviator to fly over private property is the most important of these questions, and if the present state of the law is such as to discourage aviation, there should be a consideration of ways and means by which to change it.

The Aeronautic Society has continued to hold its weekly well attended meetings at the Automobile Club of America's main hall. Hugo C. Gibson has given a diagrammatic talk on engines and Laurence J. Lesh described his whirling table and gave demonstrations with it in motion, driven by an electric motor. This brought out considerable discussion on propeller designs, etc., and Messrs. H. C. Gibson and Wilbur R. Kimball spoke on the meaning of efficiency and its relation to power, pitch, etc.

John H. Scarr, head of the Weather Bureau office in New York lectured on wind currents, the prediction of weather, and the profiting by aviators and balloonists by Weather Bureau reports.

At the close of nearly every meeting the members hold an informal model contest and the discussions in which all the members present take active part are most interesting and instructive.

The **Postal Aero Club** has been organized and already has members all over the United States and in Canada, England, Scotland and India.

At its factory, 305 W. Santa Clara Street, San Jose, Cal., there is now building an airship of 75,000 cu. ft. capacity to be operated as a captive, ending with a free flight in San Francisco, Oakland, Stockton, Sacramento, San Jose, Fresno, Los Angeles, Redlands, San Bernardino, Riverside and San Diego. Safety being the first consideration it has an extra covering over entire upper half of balloon forming a parachute that is always open.

The **Aero Club of Hartford** has now been duly incorporated. The club has been in existence over a year, having been organized on October 7, 1908, during the bridge celebration when Charles J. Glidden attended a banquet of the automobile club. Its existence during the past year has, however, been entirely passive until the present time when the incorporation was made, partly for the purpose of holding the name and partly because the science of aeronautics is reaching such an advanced stage that its beginnings in Hartford must be made in the very near future.

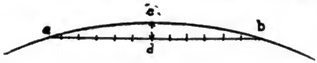
The purposes of the club do not include sport alone, but experimentation in the science of aeronautics. In this line considerable has been done already by Charles B. Whittelsey, Jr., the young son of the superintendent of the Hartford Rubber Works. He began experimenting with dirigible balloons using the smallest kind of a balloon for the purpose. The balloons were made larger and larger, until now he has a dirigible 18 ft. long by 4½ ft. in diameter equipped with a Porter motor and capable of being directed from the ground. The dirigible was recently inflated at the Springfield gas works, where coal gas is used and showed good possibilities. In Hartford water gas is used which is too heavy for aeronautical purposes. When the balloon is inflated at the Rubber Works hydrogen gas, made on the premises, is used. The balloon is made of special kind of cambric and weighs only 11 pounds, the frame being fitted with aluminum wire. The motor adds only three pounds to the weight.

EXCHANGE

Aero Forum and Market Place.

MEANING OF EXPRESSION "1 IN 12."

A curvature of 1 in 12 means a rise of arc of 1 in 12, and this expression is used whether the curve is a section of a circle or is flattened out at either end, and the depth is measured from the deepest point (c) of the curve to a straight line (d) connecting the tips (a) (b) (i. e., the chord of the arc), like sketch, the ratio being the depth of the curve to the length of the chord.



MONEY BACKING WANTED.

I have been interested in aeronautics for ten years, when I started by making paper balloons. I gradually made them larger till I successfully floated them cigar shape over thirty feet long. Then I took up wing arrangement made by overlapping turkey feathers. I found out some surprising things in regard to strength of feathers. I do not mean to assume that a practicable flyer could be made to duplicate the feats of the Wrights of feathers instead of cloth as a cover. But I do say that for my experiments I have found out that the pressure to square inch is hardly anything. I have made a machine with wings of feathers and wood, propelled by my own strength, that has lifted me clear off the ground. You can see from this I have started from bottom. What I now want is a party with money to make me a small allowance each week to keep me in material and life's necessities. In return I will share results of my experiments. I am willing to show my work to anyone, and let him judge for himself if I am worth the backing.

HARRY BROADWELL.

1548 Baymiller Street, Cincinnati, O.

SPROCKETS FOR MODELS.

Having use for a small sprocket wheel in a model I am constructing, I was at a loss until I hit upon the following device, which works very well. I drove some fine finishing brads into a spool which had held copper wire, about a quarter of an inch apart. I then cut off the heads with a pair of nippers, sawed off the top of the spool, and inserted a spindle. To cause the cord to engage with the teeth of the sprocket, I ran the former through a narrow strip of kid leather.

I send this suggestion for use of any experimenter who may, in the place of anything better, wish to use it.

DAVENPORT KERRISON.

Jacksonville, Fla.

PROPELLERS WANTED.

E. F. Stephenson, 250 Vance Street, Memphis, Tenn., would like to communicate with all makers of propellers.

PROGRESS IN AUSTRALIA.

It is rather peculiar that New South Wales, who first showed the way by Mr. Hargrave's models, should only now be starting in earnest, after the rest of the world has got a "flying" start on us. At present we are handicapped out here, there being no light engines on the market, nor manufactories for some.

I got the "craze" about thirteen years ago, on reading a work by Prof. Chanute, but gave it up after making a few experimental gliders, pocket money allowed me (I was at school then) not standing the strain, and rubber being the only motive power. I am now constructing a 3 ft. model after the Voisin type, and one monoplane also. I have not yet been able to secure a light motor (clockwork) to drive the Voisin, so may apply compressed air. Perhaps you may be able to tell me where to obtain models available for models up to 10 ft., and price. The monoplane I will drive by rubber motor.

At a lecture by the league the other night, two New Zealand gents, Messrs. Knight and Forrester, flew a machine (size about 2 or 3 ft.) by means of string wound around a rod for motive power, no planes, just a two-bladed propeller at each end of a beam, which flew like a bullet from a gun; but as the hall was short it was brought to a stop by a screen made of aluminum and steel.

H. R. EAMES.

60 York Street, Sydney, New South Wales.

MONOPLANE WANTS $ $ $.

My monoplane combines the following features, and has been pronounced the perfect machine by all: Automatic stability, automatic speed regulation, light, strong and substantial construction, no running start necessary to rise, great speed and carrying capacity with moderate power, simplicity and safety the main features. Cost moderate. Great propeller thrust. I need capital to put same before public, and will gladly furnish further details and references to interested parties.

EBB. F. STEPHENSON.

250 Vance Avenue, Memphis, Tenn.

MANUFACTURERS, PLEASE NOTE.

I wish to communicate with manufacturers of propellers, wheels, Bowden wire, chains, cables, turnbuckles, fabric, motors, correction devices and dealers in bamboo. I desire catalogues and prices.

G. F. WARRICK.

656 Bryant Street, Palo Alto, Cal.

WANTS AERO CLUB IN PROVIDENCE.

I received the October copy, and think it is a crackerjack little journal. Your Aero Forum and Market Place is a good idea, and while there is no Aero Club in Providence, I think the city is large enough to support one, and I am thinking of starting the movement soon.

E. S. LIDSTONE.

17 St. James Street, Providence, R. I.

CLUB WANTED IN MINN.

For a long time we have had the pleasure of reading your most interesting AERONAUTICS. It is up-to-date, right to the minute, which makes one eager for new copies.

We note what you say under "Exchange" and would be pleased to hear of anything that may develop in the line of a club in Minneapolis, Minn.

CURRIER BROS.

2714 N. Washington Ave., Minneapolis, Minn.

Dr. Davenport Kerrison, of Jacksonville, Fla., has completed a beautiful model of his monoplane, and is looking forward to constructing a full-sized machine at an early date.

ASCENSIONS

BALLOONERS PLEASE NOTE.

"AERONAUTICS WOULD APPRECIATE IT VERY MUCH IF YOU WOULD BE GOOD ENOUGH TO SEND US A NOTE OF EACH ASCENSION FOR RECORDING IN THESE COLUMNS. WE DESIRE TO RECORD EVERY ASCENT MADE IN THE COUNTRY DURING THE YEAR, AND OUR LIST WOULD BE IN MUCH BETTER SHAPE IF THOSE FOR WHOSE BENEFIT THIS LIST IS PUBLISHED WOULD BE MORE WILLING TO HELP.

IF YOU WOULD JUST SEND US A POST CARD TELLING THE DATE, START AND FINISH, DURATION, MILEAGE AND ANY SPECIAL ITEMS OF INTEREST, YOU WOULD GAIN OUR EVERLASTING APPRECIATION—AND IT'S WORTH HAVING, AT THAT.

THE ASTERISK (*) DENOTES TRIPS OVER 100 MILES.

Canton, Aug. 24.—J. H. Wade, Jr., A. H. Morgan and Pierce B. Lonergan in the Sky Pilot to Ashtabula, O. Dist. 80 miles.

St. Louis, Sept. 5.—A. B. Lambert in the Missouri to Camp Thelma, 1½ miles from Meramec Highlands, Mo. Dist. about 18 miles; dur. 30 min. The inflation served as instruction to the Aero Squad, Co. A, of the Missouri National Guard's Signal Corps, under direction of H. E. Honeywell.

St. Louis, Sept. 5.—Jack Bennett in the South St. Louis (15,000 cubic feet), to near Potosi, Mo., 57 miles.

North Adams, Sept. 7.—N. H. Arnold, pilot, Robt. Cook and Harold Jacslick in the North Adams I. to Rowe, Mass. Dist. 10 miles; dur. 55 min.

St. Louis, Sept. 12th.—Harlow B. Spencer alone in the Missouri to St. Charles, Mo. Dist. 20 miles; dur. 3 hrs.; 10th ascension for pilot license.

Dayton, Sept. 13.—Dr. P. M. Crume, L. E. Custer, C. M. Hill, C. J. Goelhert, C. W. Stacey, C. E. Davis and H. L. Booher in the Hoosier to Addison, O. Dist. 120 miles.

Peoria, Sept. 16.—Eugene Brown, pilot, and George E. Smith from Peoria to Cazenovia, Ill. Dist. 18 miles; dur. 1 hr. 15 min.

North Adams, Sept. 16.—N. H. Arnold, pilot; George Von Utassy, Capt. W. E. Dame and F. S. Hoppin in the Springfield to near Chesterfield, N. H. Dist. 34 miles; dur. 3 hrs. 13 min.

Dayton, Sept. 17.—Dr. P. M. Crume, pilot; Warren Rasor, Rube Schindler, Charles Shank, Chick Meisner and A. Snyder in the Hoosier to Franklin, O. Dist. 16 miles; dur. 2 hrs. 15 min.

STOPS TO ORDER SUPPER.

Peoria, Sept. 19.—H. E. Honeywell, Eugene Brown, Frank Kanne and George Kanne, of the Peoria Aircraft Club, in the Peoria. Landing near Bradley Park, the two Kanne boys apprised their mother of the trip, and, promising to be home for supper, went on, landing about 8 miles from Peoria. Here several girls were sent up, with the balloon captive.

Dayton, Sept. 20th.—H. H. McGill, Charles Benner and Earl Kobbe in the Dayton to Vandalia. Here the balloon was made captive and a number of residents of that city ascended. Dist. 10 miles.

*Balto., Sept. 21.—Hill Beachey and George Hudson in Howard W. Gill's balloon to "Powell's Valley," Pa. "Dist. 125 miles; dur. 7 hrs." No such place on the map.

Washington, Sept. 25.—Howard W. Gill made an ascent at 3:15 to-day in his 22,000 cu. ft. balloon.

TWO LANDINGS TO CHANGE PASSENGERS.

Peoria, Sept. 25.—George E. Smith, Eugene Brown, Elmer Folsom and Leslie Lord in the Peoria. After going a few miles a landing was made to allow Ted Brown, who had followed in a car, to take the place of Mr. Lord. Another change was made later on, Eugene Brown giving place to A. H. Brown. Final landing 5 miles n. w. of Mason City. Dist. 30 miles.

*Pittsfield, Sept. 26.—William Van Sleet, Jay B. Benton and J. Walter Flagg in the Mass., to Newton, N. J. Dist. 130 miles.

BUYS BALLOON—TRIES TO SAIL IT HOME.

*Indianapolis, Oct. 1.—H. H. McGill, Henry P. Pruden and John Shauer to White Plains, Ky., in the Indiana. Mr. Pruden had become enthusiastic and went to Indianapolis from Dayton to buy the balloon and sail it back home, but the wind disposed otherwise and the party traveled all night, landing the following morning. Dist. 189 miles; dur. 15 hrs.

Philadelphia, Oct. 4.—Dr. T. Chalmers Fulton, J. F. Hasskarl, David H. Schuyler, G. A. Reichter and Edwin Moore in the Ben Franklin from Point Breeze at 5:30 p. m. About 4:30 a. m. on the 5th a landing was made 22 miles n. w. of Coatesville, Pa. The party then reascended at 8:10 a. m. and traveled to Cornog, 12 miles n. e. of Downington, where the final landing was made about 10 a. m. Dist. 20 miles; dur. 13 hrs. 15 mins. The balloon traveled a circuitous course and was returning in the direction of its point of departure when landing was effected.

Fitchburg, Oct. 4th.—H. H. Clayton and J. Walter Flagg to Sudbury, Mass. Dist. 23 miles; dur. 3 hrs. 40 mins.

Fitchburg, Oct. 5th.—H. H. Clayton, J. B. Benton and J. Walter Flagg to Winchester, Mass. Dist. 35 miles; dur. 2 hrs. 5 min.

Dayton, Oct. 7th.—H. H. McGill and J. E. Schauer ascend. No report.

*St. Louis, Oct. 12.—A. H. Forbes and Max C. Fleischman. See special story.

*St. Louis, Oct. 15.—A. B. Lambert and S. L. von Phul. See special note elsewhere.

Springfield, Oct. 16th.—N. H. Arnold, pilot; S. H. Evans, A. T. Stearns, Abraham Mitchell, W. W. Goodenow in the Springfield to three miles s. of Webster, Mass. Dist. 36 miles; dur. 1½ hrs.

Fitchburg, Oct. 18.—J. B. Benton, H. H. Clayton and J. Walter Flagg in the Boston to Woburn, Mass. The balloon passed through two snow storms. Dist. 32 miles.

Albuquerque, N. M., Oct. 18.—Jos. A. Blondin and Roy A. Stamm in the Stamm, a 572 c. m. hydrogen balloon, sought to make a long-distance trip. The landing was made at the base of the Pedernal Mts., Terrence Co., N. M., a distance of 90 miles, in 2 hrs. 30 min. Alt. 12,792 ft.

Boston, Oct. 21.—J. Walter Flagg alone in Boston to 18 miles from Ayer, on road to Lowell.

WOMAN ON 110-MILE TRIP.

*Philadelphia, Oct. 21.—Dr. Thos. E. Eldridge, Miss Violet Ridgway, Frank E. Raeyling and C. G. Eldridge in the Phila. II. to Middletown, N. Y. Dist. 110 miles. Miss Ridgway wins the Eldridge-Simmerman cup. This has been held to now by Miss Margaret Tourison, as duly recorded in this magazine.

Washington, Oct. 23.—Howard W. Gill and companion in the Gill balloon from Georgetown Gas Works, Washington, D. C., with seven bags of ballast, at 11:35 a. m. Cloudy day, with sun shining at intervals, requiring constant use of ballast. One bag and a half had to be sacrificed at the start to miss telegraph wires.

Landing made at 2:10 p. m., 1½ miles from New Market, about 200 yards from railroad station. Distance traveled, approximately 30 miles in air line. Landed on account of an approaching storm which overtook the balloon just after its arrival at the railroad station.

This was Mr. Gill's third ascension.

(Continued on page 243)

Delinquent Subscribers.

As they passed the portals of the infernal regions, he asked his guide if he might go in and look around. The guide consented, but warned him to stay but a few minutes, as he could not wait long.

A long time passed, and the editor had not returned, so the guiding angel went in search of him. He found him before a cage in which a number of doomed wretches were being toasted on red-hot griddles. Over the cage was the sign "Delinquent Subscribers."

"Come," said the guide; "we must be going."

"Don't wait for me," replied the editor. "I'm not coming. This is heaven enough for me!!"

TALKS WITH INVENTORS

(*Continued from page 213*)

described in a printed work and published, or has already been sufficiently used in Denmark to enable it to be worked by a man in the trade.

The time within which the invention must be worked: Three years from the date of the patent. After that every year.

SPAIN.

Patent of invention for 20 years from the date of the grant. Importation patent for ten years and patent of introduction for five years. Certificate of addition ending at the same time as the principal patent.

Patentable inventions: Machines, apparati, instruments, processes or mechanical or chemical operations, new industrial products or results obtained by new or known means, providing their working tends to establish a branch of industry in the country, with exceptions as follows: Scientific principles or discoveries; medicinal preparations; schemes or combinations of credit or finance.

Novelty conditions in Spain: Inventions which are not known, ascertained or worked in Spanish dominions or abroad are considered new. Nevertheless, an invention patented abroad within two years may, at the instance of the inventor, be made the subject of a ten-years' patent. In addition, a five-years' patent may, after that time, be granted to the inventor, or even at any time to one who is not the author of the invention.

The requirements of the Spanish law insist upon the working of the patent within two years from the date of patent, and subsequently every year.

There are annual fees to contend with.

I will continue these particulars in next month's issue of AERONAUTICS, taking up France, Great Britain, Hungary, Italy and Luxemburg.

Sixteen gas balloons and two airship bags have been purchased this season from A. Leo Stevens, the New York manufacturer. This does not include, of course, the large number of hot air balloons sold. Six of these balloons have been sold to aero clubs and two went to South America and one to Cuba.

More than 1200 passengers were carried by Carl Myers in the captive balloon during one week at Floating Bridge, Lynn, Mass., and many thousands were drawn to the grounds. Next year Mr. Myers will tour Massachusetts with several captive outfits. At the fair at Worcester a "cut-loose" trip was made with the captive after a week's use in taking up passengers. This was duly recorded in our list of ascensions.

F.A.I. MAKES 1910 G.-B. RULES

(*Continued from page 217*)

To avoid conflicting of dates, it was decided to call an international conference on January 10 next in Paris to draw up a calendar of events. This makes it necessary for flight meets to be settled upon very far in advance. It was resolved in principle not to have more than one meet on the same day where the prizes exceed $40,000.

The various countries were accorded votes in proportion to the cubic meters of gas used during 1908. The total used by spherical balloons is 2,810,518 cu. m., divided as follows:

Germany, 1,012,849; France, 790,620; Great Britain, 332,190; Belgium, 216,500; United States, 197,329; Russia, 90,000; Italy, 89,600; Switzerland, 39,700; Austria, 34,640; Sweden, 17,000. This total would inflate 460 balloons of the biggest size (2,200 cu. m.) allowed under F. A. I. rules.

ASCENSIONS

(*Continued from page 242*)

Philadelphia, Oct. 24.—Dr. Thos. E. Eldridge, Carl De Schweinitz, A. C. Howard, Chas. D. Shaw and Bert Bartholomew in the Phila. II. to Egg Harbor, N. J. Dist. 29 miles; dur. 2½ hrs.

Peoria, Oct. 24th.—Eugene Brown, with Alfred Kanne and B. L. Wells, in the Peoria, to Rome, Ill. Dist. 10 miles.

St. Louis, Oct. 24th.—Andrew F. Drew alone in the South St. Louis. Dist. 12 miles; dur. 1 hr.

Dayton, Oct. 25th.—H. C. McGill, with six companions, to 3 miles n. w. of Upper Sandusky, O. Dist. 54 miles; dur. 4¾ hrs.

Lowell, Oct. 26.—J. B. Benton to Newbury, Mass., in balloon Boston. Dist. 25 miles; dur. 1 hr. 10 min.

WOMAN GOES 232 MILES FOR THE LAHM CUP.

*St. Louis, Nov. 3.—John Berry and Miss Julia Hoerner in the Melba III. to Lexington Depot, Tenn., landing there at 5 p. m., Nov. 4th, after nearly 24 hours in the air. Although all currents were tried, high and low, the wind gave out entirely and it was decided to land and try again. Dist. 232 miles.

Philadelphia, Nov. 5th.—Dr. Thomas E. Eldridge, Lieuts. Harold Wirgman and William Smith, Ensigns L. T. Farley and Morton Poole from Philadelphia Navy Yard in the Phila. II. to Tuckerton, N. J. Dist. 51 miles.

FOREIGN LETTER

(Continued from page 233)

and returned safely after its long journey of about 170 miles in 6½ hours.

The military authorities are reported as building two aeroplanes.

Japan.

The Japanese government has appointed an aeronautical commission to visit countries of Europe and report progress.

Portugal.

Zipfel, of Lyons, has been at Lisbon flying his Voisin.

Roumania.

Bleriot flew at Bucharest the last of October before the royal family.

Russia.

Five "Wright type" aeroplanes are under construction by the military aero station at St. Petersburg. Legagneux made flights in his Voisin the end of October at Gatchina. Alexis Rojestvenski, of Moscow, is experimenting with a triplane. It has wing tips, front and rear controls, adjustable spread and variable angle of planes. The two Russian dirigibles made long ascents during October, rising to a great altitude till they were obscured in the clouds.

Spain.

The airship Espana, for the Spanish government, built by the Lebaudy Bros., has had its first trials at Beauval, France. One ascent lasted several hours in a high wind. A 1,500-meter height trip and one of ten hours duration must yet be made to fulfil conditions.

The Torres Queredo airship, which was reconstructed by Lebaudy Bros. on October 21, at Montesson, during a trial crashed into some wires. It is 44 m. long, 6 m. diam., 1,300 cu. m. capacity.

SAN FRANCISCO-OAKLAND RACE

(Continued from page 223)

The occupants took their wetting good naturedly. What might have terminated in a serious accident was the breaking of both the valve and rip cords on the "Queen of the Pacific." Capt. Baldwin states that this is the first time such a thing has ever happened to him in all his years of experience. Luckily some hunters caught the drag rope and pulled the balloon down.

The result is still in doubt as it is claimed that the use by the "City of Oakland" of a drag rope off San Bruno Point constituted their landing.

Both Baldwin and Mars commend the young ladies very highly for their coolness and pluck during the exciting moments when the waves dashed into their baskets. They have a number of interesting photos, some taken at an elevation of 9,000 ft. Both are anxious to make further trips aloft.

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A. C. Pillsbury, of the Pacific Aero Club, had a narrow escape on Oct. 30th while taking photos of the San Francisco water front from his balloon the "Fairy" which was captive to a launch.

A heavy gust parted the line and the balloon broke away finally landing in nearly the same locality that the two racing balloons did the following day.

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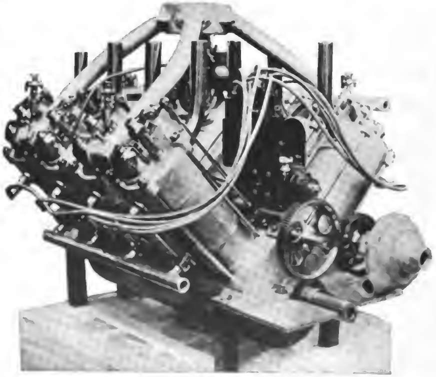

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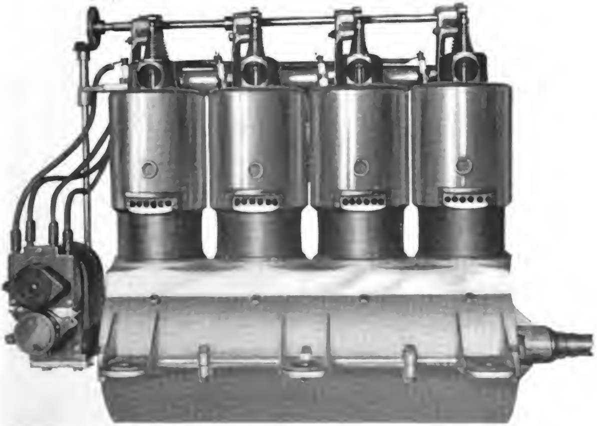

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OF AERIAL LOCOMOTION

VOL. 6
NO. 1

JANUARY, 1910

25
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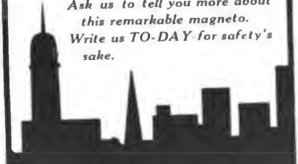

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In piloting his motor-car
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FLIGHT EXHIBITIONS

JUDGING from the wonderful interest displayed abroad in aviation, and considering the magnitude of the aeroplane industry in France, brought about principally through the exhibition flights of men like Farman, Bleriot, Delagrange, Paulhan, Latham and a host of others, beginning, of course, with those of Wilbur Wright in France, it would seem that exhibitions might provide the most direct method of creating the much-wanted enthusiasm in this country.

Some less conversant than they should be with things as they are, are decrying the entrance into the aerial arena by "professional showmen." Without intending to exonerate misrepresentations of "the state of the art," such as have already occurred at Brighton Beach and Arlington, we believe the holding of meets and exhibitions, properly conducted, will do more to stimulate public interest, encourage the inventor, and, in the period prior to the general sale of flying machines, provide funds for the experimenters and manufacturers to further improve their machines than can be accomplished in any other way.

One precedent for this belief is the stimulus given the automobile industry by the Automobile Club of America's inauguration of race meets, followed by the holding of other contests and exhibition driving by now famous auto pilots all over the country.

The aeroplane, or other type, cannot be expected to remain a scientific "toy," but to become an article of widespread trade and commerce. Money must certainly enter into consideration.

The New York *Herald* recently printed a long article praying that the art be saved from the "showmen" and the "exhibition business."

Who would belittle the wonderful exhibition made by Wilbur Wright in his flight up the Hudson last October, or the flights of Glenn H. Curtiss at St. Louis, Cincinnati and Chicago.

The article in question quotes Mr. Bishop, president of the Aero Club of America, in condemnation of exhibitions. One can scarcely credit Mr. Bishop with such an attitude when one considers his great interest in seeing rapid advancement made, and particularly the fact that the flights of Mr. Curtiss cannot do else than benefit the sale of Curtiss machines, in whose manufacture Mr. Bishop is supposed to be a financial participant.

The New York *Tribune* relevantly remarks: "Considerable antagonism is felt by certain members of the Aero Club toward those in the aeronautic world who have used their inventions for museum purposes. Considering the fact, however, that the majority of the ablest pioneers in this field are not wealthy, and that many are obliged by lack of funds for further improvements to enter the realm of the showman, a criticism of their conduct by capitalist sportsmen is a bit froward. The necessity for stimulus for airship industry is felt as soundly in commercial channels as in sporting circles."

DESCRIPTION OF THE SUCCESSFUL TYPES OF AEROPLANES

By G. C. Loening.

UNPARALLELED in the history of science is the rapid progress that has been made in the practical application of the principles of aerodynamics. The number of men who are flying is so great, as to warrant classing artificial flight with other established means of locomotion. The successful aeroplanes which have been evolved, although similar in their fundamental characteristics, have begun to vary from each other in many important details of size, arrangement and efficiency of parts. It seems, therefore, that we are at a stage, where an examination of these various types for the purpose of comparison, and a discussion of their distinguishing features, merits, and demerits, would prove of value.

It is to be borne in mind that inasmuch as aviators are constantly changing and rechanging the dimensions of their machines, without recording such alterations, many of the dimensions given here are necessarily approximate. In all cases, however, the most recent and accurate data as furnished by the large number of references consulted, as well as by close personal inspection, have been made use of.

In the science of aeronautics it has been necessary to use a number of new terms. By "supporting plane" is meant the main lifting surface as distinguished from all auxiliary or stabilizing surfaces. The term "direction rudder" refers to the movable vertical surface used for steering to right or left, while the "elevation rudder" is that horizontal surface which is used for steering up or down. "Transverse control" is the device used for the preservation of lateral balance in wind gusts, and for artificial inclination when making turns. "Keels" are fixed surfaces exerting neither lifting effect nor rudder action. "Spread" is the maximum horizontal dimension perpendicular to the line of flight, while "depth" is the dimension of the plane parallel to the line of flight. By "aspect ratio" is meant the ratio of spread to depth.

In the following paragraphs detailed descriptions of the twelve most successful aeroplanes are given. These include six biplanes, and six monoplanes. Many other types of heavier-than-air machines have been constructed, but as yet have not demonstrated successful flying qualities.

Plans and elevations of each machine are given in the figure, all drawn to the same scale. Numbers opposite the name of the machine and lettering refer to this figure.

1. FARMAN BIPLANE.—The frame consists essentially of a main box cell, somewhat similar in design to a Pratt truss, counterbraced throughout with identical upper and lower chords, uprights of wood, acting as compression members and cross wires as tension members. This construction is common to all biplanes considered here.

Supporting Planes.—P, P, two identical, directly superposed surfaces, made of Continental cloth, a special rubber fabric, stretched over ash ribs. Spread, 33 ft.; depth, 6.6 ft.; area, 430 sq. ft.

Propulsion.—M, a 50 h.p. 7 cyl., Gnome motor, air-cooled, drives a two-bladed Chauviere wooden propeller H, 8.5 ft. diam., 4.62 ft. pitch, at 1200 r.p.m.

Direction Rudder.—D, consists of two equal surfaces, at extreme rear of approximately 30 sq. ft. area, governed by a foot lever and cable.

Elevation Rudder.—E, a single surface of about 43 sq. ft. area, situated in front, and operated by the to and fro motion of lever C.

Transverse Control.—W'W', flaps on the rear ends of each plane, the pair on one side moving inversely to the pair on the other side, and governed by the side to side motion of lever C.

Two horizontal surfaces at the rear of approximately 80 sq. ft. area, act as *keels*. *Seats*—SS, for aviator and two passengers are placed on the front of the lower plane. The *mounting*, L, is a combination of skid and wheels with rubber springs.

The total weight varies greatly with the amount of gasolene taken aboard, the number of passengers, etc. The limits within which this value lies, however, are given and all calculations are made for an approximate mean weight of the machine with aviator aboard ready for flight. The weight of the Farman machine is from 1100 lbs. to 1350 lbs.; the speed, 37 miles per hour; 24 lbs. are lifted per h.p. and 2.8 lbs. per sq. ft. of surface. The aspect ratio is 5 to 1.

Ref: Aerophile, v. 17, p. 220, p. 488; Aeronautics, v. 4, p. 206; v. 5, p. 218; Flight, v. 1, p. 641; Flug Motor Tech., No. 22, p. 10; Boll, Soc. Aer. Italiano, v. 6, p. 288; Locomocion Aerea, v. 1, p. 78; Aeronautics (Brit.), v. 2, p. 117; Sci. Am. Sup., v. 68, p. 324; La Nature, v. 37, p. 329.

2. CODY BIPLANE.—The frame is made largely of bamboo combined with steel joints and ash. The chassis at centre is heavily built.

Supporting Planes.—P, P, two, identical superposed canvas covered surfaces, separated by 9 ft. at the center and 8 ft. at the tips. Spread, 52 ft.; depth, 7.5 ft.; area, 780 sq. ft.

Propulsion.—An 80 h.p., 8 cyl., E. N. V. motor M, driving two two-bladed propellers H, H, 8.25 ft. in diameter, 6 ft. pitch in opposite directions at 600 r.p.m., placed at front of main cell.

Direction Rudders—DD, two surfaces, one in front and one in the rear moved jointly and about 40 sq. ft. area.

Elevation Rudder.—EE, two equal surfaces in same plane 190 sq. ft. in area, placed in front and operated by lever C.

Transverse Control.—W'W', two balancing planes of 30 sq ft. area, at either end of main cell moved inversely. The two halves of the elevation rudder are also capable of being moved inversely and used for lateral stability.

There are no *keels*. Two *seats* SS, the lower one for the aviator, are placed out in front of the main cell. The *mounting* L consists of a large pair of wheels, which carry most of the weight, a small wheel in front of them, and a skid in the rear. Wheels are also fixed on each end of the lower plane.

The total weight is from 1900 to 2100 lbs.; the speed, 37 miles per hour; 25 lbs. are lifted per h.p., and 2.57 lbs. per sq. ft. of surface. The aspect ratio is 7 to 1.

Ref: Zeit. Ver. Deut. Ing., v. 53, p. 1143; Aeronautics, v. 4, p. 78, 126; v. 5, p. 33, 65, 154; Flight, v. 1, p. 113, 501; Encyl. d'Av., v. 1, p. 112; Boll. Soc. Aer. Ital., v. 6, p. 288; Vorreiter A., "Motor Flugapparate"; Sci. Am., v. 101, p. 198.

3. **Curtiss Biplane.** — The main cell and smaller parts are made of ash and spruce and the large outriggers of bamboo. Several members of the frame meet at the front wheel. Small cables as well as wires are used for bracing.

Supporting Planes.—PP, two identical superposed surfaces made of one layer of Baldwin rubber silk, tacked and laced to the frame. Spread 26.42 ft.: depth, 4.5 ft.; area, 220 sq. ft.

Propulsion.—A 25 h.p. 4 cyl. Curtiss motor, M, drives direct a two-bladed, 6-ft. diam., 5-ft. pitch wooden propeller H, at 1200 r.p.m.

Direction Rudder.—D, a single surface of 6.6 sq. ft. area operated by wheel at C and cables run inside the bamboo outrigger.

Elevation Rudder.—E, double surfaced, 24 sq. ft. in area and operated by front and back motion of long lever at C.

Transverse Control.—W' W', balancing planes of 12 sq. ft. area, tipped inversely by means of a brace fitted to and swayed by the aviator's body.

A horizontal fixed surface at rear, 15 sq. ft. area and a small vertical triangular surface in front act as *keels.*. The *seat* S, is on the framing in front of the main cell. The *mounting* L, is on three rigidly fixed wheels, no springs being provided. The total weight is from 530 to 570 lbs., and the speed is 47 m.p.h.; 22 lbs. are lifted per h.p., and 2.5 lbs. per sq. ft. of surface. The aspect ratio is 5.65 to 1.

Ref: Aeronautics, v. 5, p. 13, 86, 137; Am. Aeronaut, v. 1, p. 1 (new series); Boll. Soc. Aer. Ital., v. 6, p. 286; Sci. American, v. 100, p. 460; Encycl. d'Av., v. 1, p. 24; Am. Machinist, v. 32, p. 49; Flight, v. 1, p. 389; Zeit. für Luft., v. 13, p. 816; Aerophile, v. 17, p. 488;'Locomocion Aerea v. 1, p. 78; Genie Civil v. 55, p. 343.

4. **Wright Biplane.**—The frame is made of clear spruce and ash, all exposed parts being painted with an aluminum mixture.

Supporting Planes.—P, P, two identical and superposed surfaces made of canvas stretched over and under wooden ribs. Spread, 41 ft.; depth, 6.56 ft.; area, 538 sq. ft.

Propulsion.—A 25-28 h.p., 4 cyl., Wright motor, M, drives by chains in opposite directions, 2 two-bladed wooden propellers of 8.5 ft. diam., 9 ft. pitch, at 400 r.p.m., placed at rear of planes.

Direction Rudder.—D, double surfaced, 23 sq. ft. area at rear, worked by front and back motion of lever at aviator's right hand, C.

Elevation Rudder.—E, placed in front, double surfaced 70 sq. ft. in area, warpable and operated by lever at aviator's left hand, C.

Transverse Control.—By inverse warping of regions W, W, of main planes, operated by side to side motion of right hand lever, C.

A small vertical *keel* is placed at the front. *Seats,* S, S, are provided for two, the outer one for the aviator (although in some French machines the aviator sits next to the motor). The *mounting,* L, is on skids only, a truck and rail being used for starting. Total weight, from 1050 to 1150 lbs.; speed, 40 m.p.h.; 41 lbs. lifted per h.p. and 2.05 lbs. per sq. ft. Aspect ratio is 6.25 to 1.

The dimensions of the U. S. Signal Corps machine and that built by the Ariel Co. of France differ in that the spread is reduced to 36 ft. and the surface area to 490 sq. ft.

Ref: Aeronautics, v. 3, Nos. 3 and 4, v. 5, p. 170; Sci. American, v. 99, p. 140, 209; Aeronautical Jour., v. 12, p. 114; Zeit. für Luftschiff., v. 13, p. 6; Aerophile, v. 16, p. 470; v. 17, p. 488; Boll. Soc. Aer. Ital., v. 4, p. 410; v. 6, p. 288; 'Locomocion Aerea v. 1, p. 78; La Tech. Moderne, No. 1, p. 5; Encyl. d'Av., v. 1, p. 19; Am. Machinist, v. 31 (2), p. 473; Century, v. 76, p. 641; Peyrey, F., "Les Hommes Oiseaux"; Bracke, A., "Const. de l'Aerop. Wright": Vorreiter, A., "Motor Flugapparate"; Genie Civil, v. 55, p. 342; Zeit. Ver. Deut. Ing., v. 53, p. 1098.

5. **Voisin Biplane.**—Frame of ash with steel joints consists essentially of a small box cell, attached in the rear of a larger one, which is mounted on a central chassis.

Supporting Planes.—P, P, two surfaces identical and superposed of Continental cloth. Spread, 37.8 ft.; depth, 6.56 ft.; area, 406 sq. ft.

Propulsion.—A 50-55 h.p. motor, M, drives direct a two-bladed, 7.6-ft. diam., 4.6-ft. pitch metal propeller, H, at 1200 r.p.m. Several types of motors have been used.

Direction Rudder.—D, a single surface of 25 sq. ft. area, in centre of rear cell, governed by wheel at C.

Elevation Rudder.—E, a single surface of 41 sq. ft. area, situated at front end of central chassis, operated by pushing in or out on wheel at C.

Transverse Control.—None.

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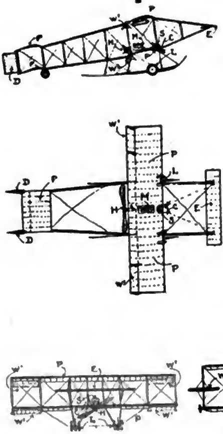
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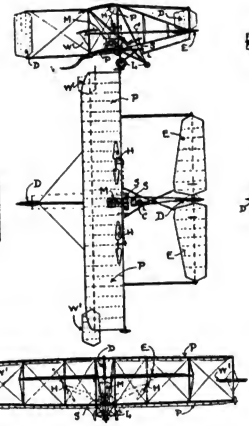
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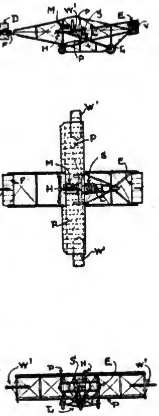
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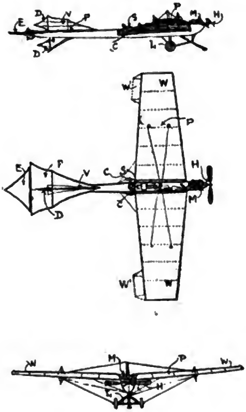
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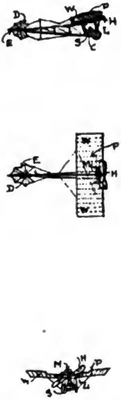
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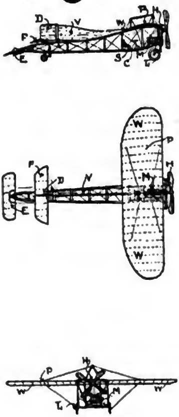
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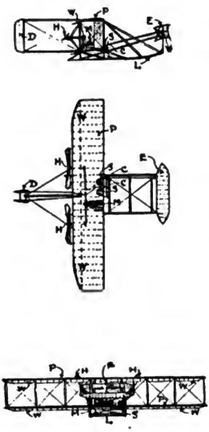
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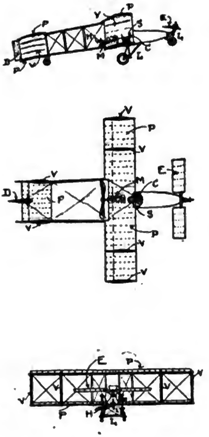
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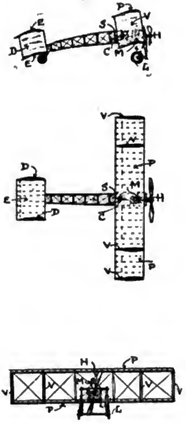
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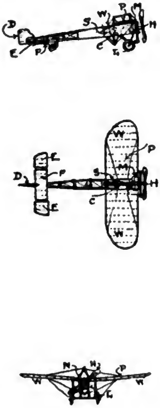
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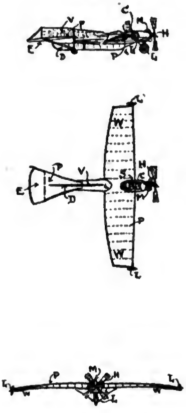
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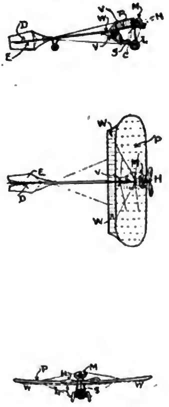
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Four vertical partitions, V, V, in main cell and the rear cell, comprising two horizontal surfaces, F, F, about 130 sq. ft. in area, and two vertical surfaces, V, V, act as *keels*. The ***mounting***, L, is on two large wheels with coiled spring shock absorbers at the front, and two smaller wheels in the rear. The *seat*, S, is on the central chassis. Total weight, from 1100 to 1250 lbs.; speed, 35 m.p.h.; 23 lbs. lifted per h.p. and 2.37 lbs. per sq. ft. Aspect ratio is 5.75 to 1.

Ref: Aeronautical Jour., v. 12, No. 46; v. 13, p. 60; Aerophile, v. 15, p. 232; v. 16, p. 38; v. 17 p. 488; Aeronautics (Brit.), v. 1, p. 11, 18; v. 2, p. 20; Sci. American, v. 97, p. 292; v. 98, p. 92; Locomocion Aerea, v. 1, p. 78; Boll. Soc. Aer. Ital., v. 6, p. 288; Flight, v. 1, p. 19, 360, 485, 505; La Tech. Moderne No. 1, p. 5; Soc. des Ing. Civ., v. 2 (1908), p. 13; Zeit Ver. Deut. Ing., v. 52, p. 956; Vorreiter A, "Motor Flugapparate"; Encyl. d'Av., v. 1, p. 19; Genie Civil, v. 55, p. 341.

6. Voisin Biplane (New Model).—The main box cell is mounted at the front end of a long central frame, which carries at its other end a smaller cell.

Supporting Planes.—P, P, two identical superposed surfaces. Spread, 37 ft.; depth, 5 ft.; area, 370 sq. ft.

Propulsion.—A 48 h.p., 4 cyl., Voisin motor, M, drives direct a two-bladed metal propeller placed in front, of 7.2 ft. diam., 4 ft. pitch, at 1300 r.p.m.

Direction rudder, D, and *elevation rudder*, E, are combined in the universally pivoted rear box cell which can be moved up or down or to either side by wheel, C, and cables. The horizontal surfaces, E, E, have about 80 sq. ft. area and the vertical surfaces, D, D, approximately 50 sq. ft. area.

Transverse Control.—None.

Four vertical main cell partitions, V, V, act as *keels*. The aviator's *seat*, S, is situated on the central frame at the rear of the main cell. The ***mounting***, L, is on two large wheels with springs in front and a single wheel at the rear. Total weight, from 800 to 950 lbs.; speed, said to be 50 m.p.h.; pounds per h.p., 19; pounds per sq. ft., 2.36; aspect ratio, 7.4 to 1.

Ref: Aerophile, v. 17, pp. 441, 485; Aeronautics, v. 5, p. 200; Fachzeit. für Flugtech., No. 39, Oct., 1909; Aero., v. 1, p. 347; Genie Civil, v. 55, p. 341.

7. Antoinette Monoplane.—A long narrow girder-like frame of cedar, aluminum and ash carries at its front portion the main plane, at the extreme front end the propeller and at the rear the rudders. This disposition is similar to that in all the monoplanes considered here.

Supporting Plane.—P, a single surface divided into two halves of trapezoidal shape, at a slight dihedral angle and constructed of rigid trussing, nearly 1 ft. thick at the centre covered over and under with a smooth, finely pumiced silk. The plane is braced also from a central mast. Spread, 46 ft.; average depth, 8.2 ft.; area, 370 sq. ft.

Propulsion.—A 50 h.p., 8 cyl. Antoinette motor, M, placed at the bow, drives direct a two-bladed metal propeller of 7.25 ft. diam., and 4.3 ft. pitch, at 1100 r.p.m.

Direction Rudder.—D, D, two triangular surfaces at the rear, about 10 sq. ft. area, operated by a foot lever and cables.

Elevation Rudder.—E, a triangular surface of approximately 20 sq. ft. area at extreme rear, operated by wheel at aviator's right hand.

Transverse Control.—Balancing planes (wing tips), W' W', are used or the regions, W, W, are warped, governing being done by wheel at aviator's left hand and cables.

At rear are vertical *keels*, V, V, and horizontal ones, F, F, giving the bird-like appearance. The *seat*, S, is placed in the frame back of the main plane. The ***mounting***, L, is on a pair of wheels fitted to a pneumatic spring with a single skid in front and a smaller one in the rear. The total weight is 1040 to 1120 lbs.; speed, 43 m.p.h; pounds per h.p., 30; pounds per sq. ft., 3.96; aspect ratio, 5.6 to 1.

Ref: Aerophile, v. 17, pp. 7, 488; Flight, v. 1, pp. 662, 681; Aeronautics, v. 4, p. 63; Sci. American, v. 100, p. 352; Rev. de l'Av., v. 4 p. 27; La Nature, v. 37, pp. 49, 329; Zeit. für Luftschiff., v. 13, p. 890; Encyl. d'Av., v. 1, p. 1; La Vie Auto., v. 9, p. 729; Flug Motor Tech., No. 22, p. 10; Boll. Soc. Aer. Ital., v. 6, p. 288; Zeit Ver. Deut. Ing., v. 53, p. 1759; Genie Civil, v. 55, p. 340.

8. Santos-Dumont Monoplane. — Frame constructed of bamboo, spruce and steel tubing, narrows to a point at the rear.

Supporting Plane.—P, has both sides slightly turned up from the centre. The canvas used is stretched very tightly over the ribs and the plane is braced by wires to the chassis. Spread, 18 ft.; depth, 6.56 ft.; area, 113 sq. ft.

Propulsion.—A 30 h.p. 2 cyl. motor is placed on top of the front edge of the plane and drives direct a two-bladed Chauviere wooden screw of 6.5 ft. diam., 3.5 ft. pitch, at 1400 r.p.m.

Direction rudder, D, and *elevation rudder*, E, are each fan-shaped and are combined and fixed by a universally pivoted joint at the rear. The elevation rudder has approximately an area of 21 sq. ft., while the direction rudder is somewhat less.

Transverse Control.—The plane is flexible and is warped in regions W W by a lever and wires.

Keels.—None. The *seat*, S, is placed under the main plane. The ***mounting***, L, consists of two wheels at the front with no springs and a skid at the rear. The total weight is 330 to 370 lbs.; speed, 50 m.p.h.; pounds per h.p., 12; pounds per sq. ft., 3.1; aspect ratio, 2.7 to 1.

Ref: Flight, v. 1, p. 603; Sci. American Sun., v. 68, p. 317; Sci. American, v. 97, p. 445; v. 99, p. 433; Aerophile, v. 15, p. 313; v. 16, p. 468; v. 17, pp. 435, 488; L'Aviation Ill., No. 34, p. 3; La France Aerienne, v. 14, p. 698; Omnia, No. 200, p. 281; Encyl. d'Av., v. 1, p. 126; Vorreiter, A., "Motor Flugapparate"; Zeit. Ver. Deut. Ing., v. 53, p. 1762; Genie Civil, v. 55, p. 466.

9. **Bleriot XII Monoplane.**—A long frame braced in every panel by cross wires carries the main plane on its upper deck at the front, and tapers gracefully to the rear.

Supporting Plane.—P, a continuous, perfectly horizontal surface of rubber cloth, over and under braced by wires from the central frame. Spread, 30.2 ft.; depth, 7.6 ft.; area, 228 sq. ft.

Propulsion.—A 35 h.p., 8 cyl., E. N. V. motor, placed in the frame under the main plane drives by chain a single, 4-bladed Chauviere propeller, H, placed above it on the edge of the plane, 8.8 ft. diam., 9 ft. pitch, at 600 r.p.m.

Direction Rudder.—D, a single surface, 9 sq. ft. area, placed at extremity of the vertical *keel*, V, and operated by a foot lever at C.

Elevation Rudder.—E, a single surface, 20 sq. ft. area, at the extreme rear, operated by front or back motion of the bell-shaped lever at C and cables.

Transverse Control.—Side to side motion of the same lever warps inversely the regions W W of the main plane. The front edge only of the plane is rigid. A small surface under the seat also aids in lateral balancing.

Keel, F, is a horizontal fixed surface of 21 sq. ft. area. The *seat,* S, is a bench for two or three, placed back of the motor under the main plane. The *mounting,* L, is on two large front wheels and a smaller wheel all fitted with thick rubber rope springs. Total weight, 1150 to 1300 lbs. Speed, 48 m.p.h.; pounds per h.p., 35; pounds per sq. ft., 5.3; aspect ratio, 4 to 1.

Ref: Aerophile, v. 17, pp. 319, 488; Sci. American Sup., v. 68, p. 136; Encyl. d'Av., v. 1, pp. 72, 92; Flug. Motor Tech., No. 20, p. 18, No. 22, p. 10; La Vie Auto, v. 9, p. 729; Locomocion Aerea, v. 1, p. 28; Aeronautics (Brit.), v. 2, p. 117; L'Automobile, v. 7, p. 520; Genie Civil, v. 55, p. 344.

10. **Bleriot XI Monoplane.**—The front half of the cross-wired frame is covered.

Supporting Plane.—P, divided into two halves at a small dihedral angle, fitting into sockets in the central frame; the ribs of the plane are of wood and the sharp front edge of aluminum sheeting. Spread, 28.2 ft.; depth, 6.5 ft.; area, 151 sq. ft.

Propulsion.—A 23 h.p., 3 cyl., Anzani motor, M, drives direct a 6.87 ft. diam., 2.7 ft. pitch, two-bladed Chauviere screw, H, at 1350 r.p.m.

Direction Rudder.—D, a 4.5 sq. ft. area, surface at rear, operated by a foot lever at C.

Elevation Rudder.—EE, in two halves, mounted on end of a fixed horizontal *keel,* F, which is 17 sq. ft. area, and operated by front and back motion of the "bell crank" at C. The area of this rudder is 16 sq. ft.

Transverse Control by warping, and *mounting* as in No. XII. *Seat,* S, is placed in the frame at rear of main plane. Total weight, 650 to 720 lbs.; speed, 36 m.p.h.; pounds per h.p., 29; pounds per sq. ft., 4.5; aspect ratio, 4.35 to 1.

Ref: Zeit. Ver. Deut. Ing., v. 53, p. 1574; Aeronautics, v. 5, p. 118; Aerophile, v. 17, pp. 102, 106, 129, 318, 488; Encycl. d'Av., v. 1, pp. 3, 72, 92; Flug. Motor Tech., No. 22, p. 10, No. 23, p. 7, No. 25, p. 14; Flight, v. 1, p. 453; Boll. Soc. Aer. Ital., v. 6, p. 288; Locomocion Aerea, v. 1, p. 78; La Vie Auto, v. 9, p. 729; La Nature, v. 37, p. 329; Sci. American Sup., v. 68, p. 136; Bracke, A., "Les Monoplane Bleriot"; Flugsport, No. 24, p. 685; Genie Civil, v. 55; p. 260, 344.

11. **R. E. Pelterie Monoplane.**—The central frame is short and all exposed parts are covered with Continental rubber cloth. Steel tubing is extensively used. The bird-like form is especially noticeable.

Supporting Plane.—P, a very strong, solid surface, curved downward dihedrally and requiring little bracing. Spread, 35 ft.; depth, 6.1 ft.; area, 214 sq. ft.

Propulsion.—A 7-cyl., 35-h.p., R. E. P. motor, M, drives a 4-bladed, aluminum and steel propeller, H, 6.6 ft. diam., 5 ft. pitch, at 900 r.p.m.

Direction Rudder.—D, a surface approximately of 8 sq. ft. area below the central frame and operated by the right hand lever at C.

Elevation Rudder.—EE, a 20-sq. ft. area, surface at the extreme rear, operated by lever at aviator's left hand and cables.

Transverse Control.—Each half of the plane is entirely warpable about its base, the left hand lever at C inclining inversely the regions WW.

Vertical *keels,* V, V, and a horizontal keel, F, are fixed to the frame. The *seat,* S, for one passenger, is in a "cock pit" in the frame. The *mounting,* L, is mainly on a large single wheel with an oleo-pneumatic spring in the center at the front and a smaller one in the same center line at the rear. When first starting the aeroplane is inclined, resting on one end of the plane on each end of which also a wheel is placed. Total weight, 900 to 970 lbs.; speed, 39 m.p.h.; pounds per h.p., 27; pounds per sq. ft., 4.4; aspect ratio, 5.75 to 1.

Ref: Soc. des Ing. Civ., v. 2 (1908), p. 13: Boll. Soc. Aer. Ital., v. 6, p. 67, 288; Aerophile, v. 15, p. 331; v. 16, p. 226; v. 17, p. 33; Flight, v. 1, p. 19, 360; Aeronautical Jour., v. 13, p. 64: Zeit. für Luftschiff., v. 12, p. 458: Aeronautics, v. 4, p. 21: La France Aerienne, v. 14, No. 7, 9: Zeit. Ver. Deut. Ing., v. 53, p. 1760: Genie Civil, v. 55, p. 346.

12. **Grade Monoplane.**—The frame consists essentially of a main metal tube chassis at the front, from which a long thick piece supporting the rudders is run out to the rear.

Supporting Plane.—P, made of Metzeler rubber fabric stretched over a bamboo frame and at a slight dihedral angle. Spread, 30 ft.; depth, 9.5 ft.; area, 284 sq. ft.

Propulsion.—A four-cylinder, 24-h.p. V motor, M, is placed at the front edge of the plane and drives direct a two-bladed metal propeller about 5 ft. in diam., 4 ft. pitch, at 1000 r.p.m.

Direction Rudder.—D, a single flexible surface, estimated at 16 sq. ft. area at the rear.

Elevation Rudder.—E, a single flexible surface of approximately 18 sq. ft. area, operated by a lever and cables, also at the rear.

(Continued on page 35)

CONSTRUCTION AIDS, VIII.

FIGURE 1 shows the arrangements on the Antoinette VII. (Latham), by which the wings are warped. Wires from the cross-arm attached to the sprocket run up over pullies to a hand wheel, as shown in Fig. 3. The steering up and down is shown in illustration 2. Steering to left or right is done by the feet pushing on either side of a horizontal piece pivoted in the middle.

Fig. 4 illustrates the shock-absorbing device used in the Voisin machines. Fig. 5 shows a section of the skeleton of the lower surface near the centre of the machine, where vertical surfaces rise on each side of the aviator. All woodwork is of ash, the only tubing being used in the chassis. The spacing of the ribs is about 1 ft. 3 ins. The main lateral beams are rectangular, 1½ by ¾ in. The ribs have a cross-section of 5-16 by ¾ in., except the "T" ribs in the drawing, which are 1½ in. wide at the base. Vertical struts have a maximum width of 1½ in. by a depth of 2 in., cross-section elliptical.

Fig. 8 shows the joint device used by C. F. Blackmore, of New York, in the machine which he is building. Patent has been applied for on this.

A combination skid and wheel landing device is illustrated in Fig. 9. Fig. 10 shows an idea for the rear edges of supporting surfaces.

A novel gasolene tank (Fig. 7) has been put out by the Aerial Mfg. Company, 4 Upper Charles street, Finsbury, London, E. C., which is in the shape of a plane, and is so built upon the framework of aeroplane as to serve the purpose of a plane and assist in carrying its own weight. It has a division down the centre for strengthening purposes which prevents the shifting of petrol wholly to one side, and thus upsetting the lateral stability of the machine. On the bottom of the divisional piece there are small holes sufficient to enable the level to be maintained each side, whilst preventing the sudden flow of gasoline all to one side when the balance of the machine is upset. There is an exit for petrol from each lowermost point "a" beneath the tank, the four pipes being connected before reaching the carburettor.

They also manufacture fittings for joints of framework (Fig. 6), which can be used singly or in pairs at each joint. There is a small lug in the corner of the joint to which the diagonal wire is affixed. This fitting makes a strong and rigid joint, and can be had to suit different sizes of framework.

Army News

FIRING tests at a captive balloon at Sandy Hook, N. Y., have recently been conducted by the board of ordnance and fortifications. These have been secret, and no information is available.

Lieutenant Frank P. Lahm was relieved from detail in the signal corps Nov. 27 and assigned to the Seventh Cavalry at Fort Riley. His service with the signal corps had to be terminated on account of the regulations prescribing a time limit during which officers of line organizations may serve on special details, etc.

Lieutenant Frederic E. Humphreys of the engineer corps upon the completion of instruction with the signal corps aeroplane was relieved from duty with the signal corps and returned to his station at Washington Barracks, D. C.

Lieutenants R. S. Bamberger, Second Cavalry; Oliver A. Dickinson, Fifth Infantry, and John G. Winter, Sixth Cavalry, who were attached to the signal corps last spring for instruction in aeronautics have recently been relieved by War Department orders and returned to duty with their respective regiments. During their service with the signal corps these officers had several practice voyages in free balloons as passengers with Lieutenant Lahm, but most of their instruction was with the signal corps dirigible balloon No. 1. These officers accompanied the dirigible to the military tournaments at Toledo, O., and Des Moines, Ia., during the past season.

Lieutenant Benjamin D. Foulois of the signal corps has had considerable experience in operating the dirigible balloon, and also received instructions at the College Park field in the operation of the Wright aeroplane. Lieutenant Foulois still remains on duty with the signal corps, and was recently in charge of the aeronautical equipment of the signal corps used at Sandy Hook proving ground for experimental firing.

On Nov. 20 the aeroplane was moved from College Park, Md., to Fort Myer, Va., where it is now stored in the balloon house.

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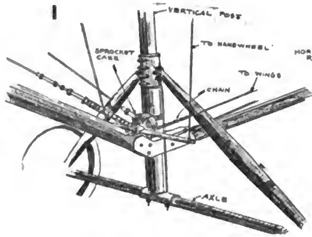

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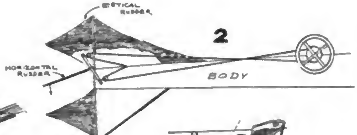

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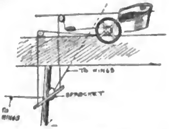

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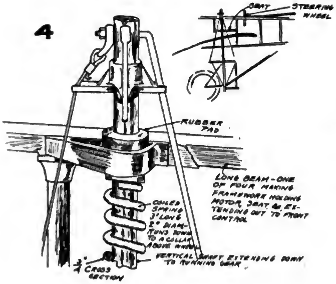
SEAT
STEERING WHEEL
RUBBER PAD
LONG BEAM – ONE OF FOUR MAKING FRAMEWORK HOLDING MOTOR, SEAT & EXTENDING OUT TO FRONT CONTROL
COILED SPRING 3' LONG 2" DIAM – RUNS DOWN TO A COLLAR ABOVE WHEEL
VERTICAL SHAFT EXTENDING DOWN TO RUNNING GEAR
½ CROSS SECTION

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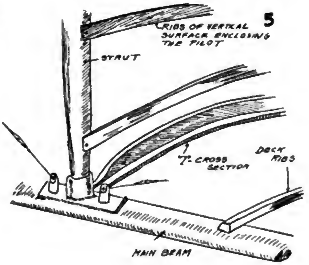

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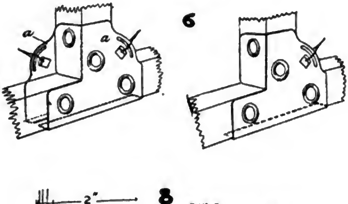

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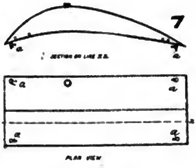

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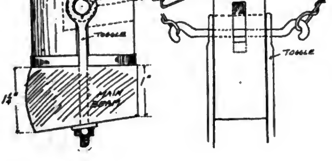

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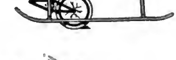

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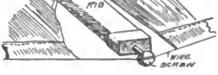


TALKS WITH INVENTORS—IV

By F. O. Andreae

PATENT ATTORNEY.

France.—Patents for inventions are granted for five, ten or fifteen years from the date of the deposit. Certificate of addition ends with the principal patent.

New industrial products, new methods or the new application of known methods for obtaining an industrial result or product are patentable inventions. Exceptions: Pharmaceutical compositions or medicines of all kinds; schemes or combinations relating to credit or finance; inventions or applications considered as being contrary to public morals or security, and contrary to good living or the laws of the country.

Conditions as to novelty which the invention must satisfy are: The discovery, invention or application is not considered new which in France or abroad before date of the deposit has been sufficiently published to enable it to be carried out.

Time within which the inventions must be worked is two years from the grant of the patent. The working must at no time cease for the space of two consecutive years.

There are fixed annual fees to contend with.

Great Britain.—Nature and duration of the grant: Fourteen years from date of application. (Provisional protection for nine months may be obtained to commence with.)

Patentable inventions: New arrangements or methods (in machines or processes) even to obtain a known result, new combinations of known elements (in machines and processes), new means of applying a substance or a known method producing a new industrial result, suppression of an operation in a known process, but no theoretical principles without immediate industrial application, the new employment of a known material for an analogous purpose.

To be considered new, an invention must not have been used generally nor known to the public in Great Britain. It must not have been the subjct of a prior English patent, nor have been published in a work printed or introduced into the Kingdom.

No time was fixed for the working of the invention until recently. Compulsory licenses may be issued.

A tax covering the first four years is exacted; then annual fees.

Hungary.—Patent of invention for fifteen years from the date of the deposit.

Certificate of addition ending with the patent or in certain cases taking its place.

Every new invention capable of being industrially worked is patentable, except: Inventions of which the application is contrary to law, order or good morals; arms of war, explosives, ammunition, fortifications on ships of war if the Minister opposes the grant within a prescribed time; scientific theories and principles; food stuffs and medicines for men and animals; products obtained by chemical means processes alone being patentable.

An invention will not be considered new which has been divulged to such an extent, either by printing or other means of publication, as to allow it to be made useful by men of the trade, unless a publication or working took place more than a century before.

The invention must be worked three years from the publication made on the grant of the patent, and subsequently every year.

Annual fees.

Italy.—Grant. Patent of invention for not exceeding fifteen years from the last day of one of the quarters of the year. Patent of importation for period not exceeding that of the foreign patent, and in any case not exceeding fifteen years. Certificate of addition ending the same time as the principal patent.

Qualifications: Every invention or industrial discovery—that is to say, an industrial product or result, an instrument, a machine, an engine, a mechanism or any mechanical contrivance, a process or a method of industrial production, a motor or the application of a force already known, is patentable. The technical application of a scientific principle giving immediate industrial results. Exceptions: Inventions contrary to law, morals and public security; inventions whose object is not the production of material objects; inventions or discoveries purely theoretical, and all kinds of medicines.

An invention is considered new in Italy when it has never been known previously, or when it is one of which the particulars necessary to carry it out have not been known, although the fact of its existence is known. Nevertheless, inventions already and still patented abroad may be made the subject of a patent of importation, if in the interval it has never been imported or applied in Italy.

The invention must be worked within the year which follows the grant of the privilege for patent having a duration of *less* than five years. Subsequently every year. Two years, when the application is for patent for *more* than five years duration. Subsequently every two years.

A tax proportionate to the length of the patent.

Annual fees, *increasing* every third year.

Luxemburg.—Nature and duration of the grant: Patent of invention for a period of fifteen years from the day following the date of the patent, *only valid if the German patent is granted.*

Certificate of addition ending at the same time as the principal patent.

Patentable inventions: New inventions capable of being worked industrially. Excep-

(Continued on page 35)

IN THE WORLD OF AVIATION

$1,000,000 Wright Company—A. A. A. May Control Aviation—Los Angeles Aero Meet—New Rinek Aeroplane

Wrights Form $1,000,000 Company.

The Wright Company was incorporated on November 22, 1909, for the purpose of manufacturing and trading in flying machines. Its capitalization is $1,000,000. In its certificate of incorporation there is a provision that the capital stock be not increased at any time within five years unless upon the consent of the Wright Brothers.

A short time thereafter the first meetings of the stockholders and directors were held at the office of Nicoll, Anable, Lindsay & Fuller, and the following were elected officers and directors: President, Wilbur Wright; vice-presidents, Orville Wright and Andrew Freedman; secretary and treasurer, Alpheus S. Barnes.

The following directors were elected in addition to Orville and Wilbur Wright: Russell A. Alger, August Belmont, Edward J. Berwind, Howard Gould, Morton F. Plant, Allan A. Ryan, Theodore P. Shonts, Robert Collier, Andrew Freedman, Cornelius Vanderbilt. Pliny W. Williamson, personal counsel of the Wright Brothers in the East.

The executive committee, which will have active charge of the company's affairs, are: Andrew Freedman, chairman; Russell A. Alger, August Belmont, Cornelius Vanderbilt, Wilbur Wright.

It was announced that the factory is to be located at or near Dayton, Ohio, with aviation grounds possibly in various States, where demonstrators will be taught the operation of the machine. This will give the Wrights an opportunity to proceed toward any other solution that may be possible of scientific problems of aviation. The New York office will be at the Day and Night Bank Building, Fifth avenue.

The centre of attention at the present time is in connection with the action of the Wright Brothers against the Herring-Curtiss Company. H. A. Toulmin, of Springfield, Ohio, has always been the patent attorney for the Wrights, and came to New York City recently to confer with new New York counsel retained in the patent cases, all of which were started in New York. Mr. Edmond Wetmore was designated by the new company to assist Mr. Toulmin.

All Ready for Los Angeles Meet.

The first big aviation meet to be held in this country will be that at Los Angeles, January 10 to 20, 1910.

There are $50,000 in prize money, and in addition there will be grand prizes of $10,000 for each world's record broken. The meet is officially sanctioned by the Aero Club of California and affiliated clubs.

Willard, with the Aeronautic Society's Curtiss aeroplane; Knabenshue and Beachey, with their dirigibles, are now on the ground. Curtiss has signed a contract to appear, and four French aviators, including Paulhan, are due to sail from Havre on the 18th. There are two Bleriots and two biplanes. Baldwin and Bumbaugh are expected with their dirigibles, together with a number of balloonists.

Every facility will be provided for the comfort of contestants and the public, and it is hoped that some new records will be made. January weather in Los Angeles is proverbial, and there should be nothing to mar the chances for good flights.

A. A. A. May Control Aviation in U. S.

The American Automobile Association, at its annual meeting in New York on December 1, appointed a committee to investigate into the status of aviation in this country, and to formulate a tentative plan for the bringing together on a working basis the various aero organizations and aviation sections formed of auto clubs, the plan to be submitted to the Executive Committee at its next monthly meeting.

Three members of the A. A. A. were named, with Powell Evans, a well-known automobile enthusiast of Philadelphia, as chairman. Lee S. Burridge, president of The Aeronautic Society; Thomas A. Hill and Louis R. Adams, directors, were also asked to serve on the committee. The other members of the committee are C. H. Gillette, of Hartford; A. G. Batchelder, editor of *The Automobile*, and John B. Coffin, of Worcester.

Just whether the A. A. A. itself will handle the matter, or will form a separate body with the same initial letters, will be thoroughly considered by the committee.

Automobile clubs all over the country, already members of the A. A. A., or individuals, members of auto clubs, are forming aero organizations nearly every week in some part of the United States, as for instance, the Aero Club of Hartford, recently organized by prominent men in the automobile industry in Hartford, among them Charles B. Whittlesey, of the Hartford Rubber Works Company, which is making special tires for aeroplanes; Hiram Percy Maxim and C. H. Gillette.

Having already the control of all automobile events in this country, except one or two international events under the control of the Automobile Club of America, and realizing the sport of aviation is bound to become in a short time very general, it was deemed advisable to exercise a proper control in order to keep the sport at a high standard. All these new aero clubs formed out of the auto clubs will, of course, come in with the aero division of the A. A. A.

M. B. Sellers Continuing Flights

FLIES WITH 4 H. P.

M. B. Sellers, Fireclay, Ky., is continuing flights with his 7 horse-power quadroplane for the purpose of testing out propellers. The foreign propeller imported gave less thrust than his own. With the last one tried—a four-bladed one—he obtained more thrust than with any other. The flights have been better and higher. The thrust while flying has not been determined.

The best propeller thrust for a direct-connected propeller machine standing, was 48 pounds. The Dutheil & Chalmers 7 horse-power motor gave but 4 brake horse-power at 1,500 r. p. m.

Work is progressing on the new machine, which is being built with a view to speed.

The New Rinek Biplane

C. Norvin Rinek is bringing his new aeroplane to New York for trial flights on the Hempstead Plains, near Garden City, where he has hired a shed for the housing of the machine, which has been built under Mr Rinek's direction by the machine department of the Eastern Cordage Company of Easton, Pa. Last year one was built resembling this greatly as far as general appearance goes, but this new machine is a remarkably fine specimen of good workmanship.

The apparatus approximates the Voisin type of biplane, made famous as the first aerial vehicles of Farman and Delagrange. This type of machine was decided upon over a year and a half ago. The photograph herewith reproduced shows the second machine.

Description.

This new machine has undergone considerable modifications from its predecessor. The present machine weighs above 1,540 pounds, the difference in weight being due to the fact that the Voisins employ wood in the construction of their machines whereas steel tubing is used in this.

The "fuselage," or car, equalizing planes and the rear rudder alone are of wood. This car as in the Voisin carries the aviator motor, gasolene, tanks, etc., the aviator sitting with his back to the motor.

The whole machine is mounted upon a steel tubing chassis, running on light wheels of motor-cycle type.

The propeller was especially designed to meet the particular requirements of this machine under the supervision of the company's engineer, E. I. Smith. It is of a true screw, laminated. The diameter is 7 feet 6 inches: the pitch 4 feet. Driven at 1,000 r. p. m., an actual thrust of 271 pounds has been obtained. The propeller is directly connected to last year's model 30-40 horse-power, water-cooled motor, cylinders 3 13-16 by 4 inches. It has 8 cylinders, arranged "V" shaped, and weighs ready to operate 275 pounds. The spread is 10 metres; each main surface is 2 metres deep, spaced 1.5 m. apart. The spread of the two front controls totals 5 m., by 1 m. deep. The front edge of this control is 2.5 m. from the front edge of main surfaces.

The rear box tail spreads 2.7 m., by 2 m. deep. From rear of main planes to front of box tail is 4 m. The tail is divided by a vertical rudder.

Cincinnati's Aero Meet

On November 12, 13 and 14 there was held, under the auspices of the Aero Club of Cincinnati, at Latonia racetrack, across the river from Cincinnati, in the State of Kentucky, a dirigible, balloon and aeroplane meet, with Glenn H. Curtiss and Chas. F. Willard in Curtiss aeroplanes, and Knabenshue and Beachey in their dirigibles as the stars. The other feature was a balloon race, in which but one balloon got away—that is, regularly.

The grounds were poor for aeroplane flying, and all the flights had to be made on the track itself.

The first day everyone was in the air. Curtiss and Willard made short flights; Beachey and Knabenshue gave demonstrations in their two dirigibles, and "the boy aeronaut,' Cromwell Dixon, in his own airship. To end the day there was a hot air ascension and parachute drop. The two dirigibles in the air at once, manœuvering over the infield and the grand stands made a pretty sight. Dixon sailed his ship close over a freight train, which provided a free grand stand for many of the citizens who were financially astute. The Curtiss machine was damaged slightly by a collision with a team.

The second day was somewhat windy, but the talent did their share to provide amusement for the crowd. The flags on the grand stand were half extended when "the aeroplanes began to play grasshopper up and down the track," as one of the participants put it. Dixon could scarcely make headway against the breeze, and at last drifted on to the top of the grand stand. He managed to drop his guide-rope, which caught in Curtiss' wing tip, breaking it for the second time. The frame of the airship bumped the roof and was pulled down safely. The hot-air balloon made its scheduled ascent.

Another exciting incident was the breaking of one of the wires running to the rudder of the Willard machine at the very moment it was above a fence. By acrobatic work Willard got it over the track and landed.

Spare time was employed in testing the two engines of the aeroplanes, both of which are identical. With a wooden propeller Curtiss' engine turned up 1,050 r. p. m., while Willard's gave 1,120. Curtiss then put on an aluminum one and got 1,220 r. p. m. The wooden propellers weigh about 7 pounds, while the aluminum one weighs about 29 pounds.

On Sunday, the third day, the wind was worse than before. It was not until very late that Curtiss and Willard were able to make flights. Knabenshue, Beachey and Dixon were up, but the wind proved strong. The wind was so strong, in fact, that Beachey, whose airship has a speed of 15 miles an hour, could only hold his own and remained in one spot for several minutes. Just after starting Dixon lost his transmission chain, and had to work quickly to get down. This day also ended in a hot-air ascent.

Three balloons were to have competed in a distance race—the Dayton, the Cincinnati and the Haddock—but only one got away at 7:20 Sunday evening.

This was the "Haddock," piloted by George Howard, with Charles V. Tevis and J. Campbell Cory as passengers. It landed near Derby, N. Y., at 5:20 a. m. the following day, after a fast trip. At one stage the balloon outdistanced a railroad train, and at another drifted into a rain-storm. After dropping close to the waters of Lake Erie three times and throwing out every available bit of ballast and loose articles, a landing was accomplished, albeit with considerable difficulty. First, the balloon hit the ground a good bump, and one passenger got (?) out. Some more bumps, with the other occupants, Cory and Howard, doing a few acrobatic stunts, until it caromed on the roof of a house and tore off shingles to the amount of $2. Finally the balloon was ripped as it made a last attack on a tree, and shelter was sought by all.

The distance from Latonia to Derby is about 385 miles, done in 10 hours flat. Going some!

H. H. McGill had hard luck with the Dayton, which broke away on the last day. The hydrogen gas, which had to be used, was turned from the Cincinnati into the Haddock.

The night of the 12th a workman was cleaning out one of the generators and let a lighted lantern down into the cask for some reason. Result: ride on the head of the barrel for 200 feet, a cracked skull, hospital.

WILLARD GETS PRIZE.

In the aeroplane contest Charles F. Willard was awarded first and second prizes over Glenn H. Curtiss. The prizes were donated by the Automobile Club of Cincinnati, and were for height and distance.

In the dirigibles, Lincoln Beachey was awarded first prize and Roy Knabenshue second prize. The first prize was donated by the Optimist Club and the second by the guarantors. In the balloon race the Haddock, owned by Leslie B. Haddock, of Cincinnati, won. This was the only starter. The Haddock won the Piccadilly Club Cup and the Convention League Cup, one being for distance and the other for height attained. As there was no third prize in the dirigible contest the committee on prizes passed a resolution thanking young Cromwell Dixon, of Columbus, for his kind assistance and praising him for his many successful flights.

First Curtiss Aeroplane Sold Abroad

A Curtiss aeroplane has been sold by the Paris agent of Wyckoff, Church & Partridge to F. L. de Riemsdyk, a Dutchman living in France. J. F. Haendel, the Paris agent, also is distributor of the Antoinette machine. De Riemsdyk, a young man under the voting age, is connected with the foreign agency of the Curtiss aeroplane, and will compete in the big aviation meets next spring and summer. The first event will be at Cairo, in February. He is now in Hammondsport, at the Curtiss factory, where a special study of the machine and motor will be made. His decision in the purchase of a machine was arrived at through the apparent ease of operation and handling of the Curtiss machine, and its speed and portability.

C. B. Harmon Buys Machine

Another Curtiss machine has been sold by the W. C. & P. Company to Clifford B. Harmon, of New York, a widely known real estate operator and balloonist. Both of these machines will be delivered the first week of January. Mr. Harmon is the second New York purchaser, the first being The Aeronautic Society.

Mr. Harmon's purchase is for sport alone. He will fly it himself with the intention of competing in aviation meets.

During the past few weeks Wyckoff, Church & Partridge have received a surprisingly large number of applications for agencies throughout this and other countries, as well as a great number of information and price-asking letters from individuals. The most important deal being considered is one embracing the sales agency for the entire continent of South America. A syndicate of leading South American men are negotiating for the purchase of 75 Curtiss machines during 1910 for that continent.

Agencies for Curtiss machines have already been established in New York, Chicago, Boston and Philadelphia. J. H. McAlman in Boston, and G. H. Gantest in Philadelphia are the two new ones.

The ten aeroplanes going through the Curtiss works will be the same as the one used at Governor's Island during Hudson-Fulton week.

Charles K. Hamilton and Otto Brodie have been continuing practice flights at Hammondsport. Hamilton will give flying exhibitions and Brodie will demonstrate Curtiss aeroplanes for the Chicago agency.

New Aeroplane in Baltimore

Howard W. Gill, of the Motor Car Company, Baltimore, Md., is putting through an experimental aeroplane to be tested out within a short time. Fine workmanship is displayed in its construction.

Another Aero Factory

A number of wealthy men, interested in some of the biggest industrial enterprises of the country, but whose names are withheld for the present, are behind Dr. William Greene in establishing a factory in Middletown, Ohio, for the manufacture of aeroplanes for the public at a conservative price within the reach of all. No patents will be infringed in the manufacture of these machines, as it is possible, it is claimed, to build a machine which does not infringe in any way any existing patent. For instance, the Voisin machine in Europe is said to be the only machine which does not infringe the Wright patents. Greene has applied for patents of his own.

The machines will be about 25 feet spread, suitable for amateurs to drive after one or two lessons. Six motors, Gnome, R. E. P., E. N. V., Antoinette and Anzani among them, have been ordered by cable from Europe. These will be gone over by experts and designs made for a motor to be made by this new company for use in the machines.

The company will be incorporated with a large capital. Dr. Greene will be general manager. The company will give all inventors an opportunity to prove their claims and will adopt any ideas which look good.

Gordon Bennett 1910 Aviation Meet

St. Louis wants to raise $150,000 in order to get the G.-B. aviation meet, and a stock company is suggested with a capital of this amount, of which one-half is to go to prizes. Reimbursement comes from admission fees.

Oakland, Portland, Los Angeles and Des Moines are also getting busy, while the Baltimore-Washington clubs are going ahead with assurance of obtaining the selection of College Park for the site. The $100,000 guarantee fund already amounts to over $65,000, much of which is paid in.

Thomas F. Walsh, who headed a delegation which entertained G. H. Curtiss and the officers of the Aero Club of America at the Metropolitan Club, expressed himself as confident of the selection of College Park, "if Washington can offer satisfactory aviation grounds, proper transportation facilities, and sufficient money."

With many cities bidding feverishly for the Aero Club of America's placing of the 1910 Gordon Bennett Aviation Meet, the Aero C. A. is quietly getting together figures and hoping for a long-drawn-out flying carnival at several large cities, with a grand wind-up in the vicinity of New York, the series to extend over a month or more.

The Thomas Flyer

After experimenting throughout the summer and making a number of short jumps, Dr. George Francis Myers, who is also a graduate of the Worcester Polytechnic and was a Fellow in Engineering at Cornell, completed a half-mile flight at Buffalo in his aeroplane.

This machine, as already noted in these pages, is the one that the E. R. Thomas Motor Company is exploiting. It was fitted with one of the Thomas Taxicab motors and speeded over the roadway from which it rose quickly and flew along the street "at a terrific rate," according to those who saw it.

On essaying a turn back to his starting point the operator handled the rudder too strenuously and the machine came down in an open field to the left of the street. Here it made a good preliminary landing, but owing to the speed at which the machine was going it ran some distance over the rough ground, its front wheels finally striking a hole, which broke them off and let the machine down suddenly on its front planes, breaking them. The damage is now being repaired and more flights will soon be made—"maybe a New York to Paris trip," as was accomplished by the famous automobile of the same company.

Aviators' Suspensions Begin

For competing in the unauthorized meeting at Doncaster, England, the following aviators were suspended from flying in any aviation contests until December 1, 1909: Delagrange, Le Blon and Molon.

Licenses for Aviators

Hereafter aviators competing in events sanctioned by the Aero Club of America will have to be licensed by that association. At a meeting of the board of directors on November 23, a set of rules governing the issuance of licenses to aviation pilots was adopted, and it was determined that the only recognized pilots of the club are Wilbur and Orville Wright and Glenn H. Curtiss. Any entrant for the proposed international aviation meet of 1910 to be held in this country must comply with these requirements:

> Application made in writing to the board of directors by any member over twenty-one years of age. Applicant must state and prove to the satisfaction of the board of directors that he has made three flights of at least one kilometer each without coming in contact with the soil. These three flights must have been made under the general supervision of the contest committee, and must include a return to a point near the place of starting. These circuits must have been made by the applicant alone without a passenger and between the hours of 10 a. m. and 4 p. m. on three different days within a period of thirty days at the maximum.
>
> The board of directors may, without assuming any responsibility, issue a license on such application when, in their opinion, the applicant is fully qualified, and when they are satisfied that his methods of flight are reasonably prudent and safe, and that he is a person of such sound judgment and discretion as to entitle him to assume such responsibility, or they may in their discretion refuse to grant such license.

Any member whose application for a license has been refused may not again make application until after a lapse of six months and until after he has made three additonal flights as provided.

The board of directors may in its discretion suspend or revoke any license issued under these rules.

The board of directors may upon written application grant a license as aviation pilot to any member holding such license in any affiliated foreign club.

Geo. O. Totten, Jr., Builds Glider.

George Oakley Totten, Jr., a prominent architect of Washington, has taken up the sport of gliding. About two months ago he started a machine of his own. It is practically a monoplane, with a smaller horizontal superposed surface in the middle. It is finely built of spruce, covered with fine muslin, with brass guy wires and aluminum casings. There is a small tail, which is used for gliding the machine up and down or left and right. There is about 120 sq. ft. in the main surface and about 40 in the upper. The weight of the whole is but 36 pounds.

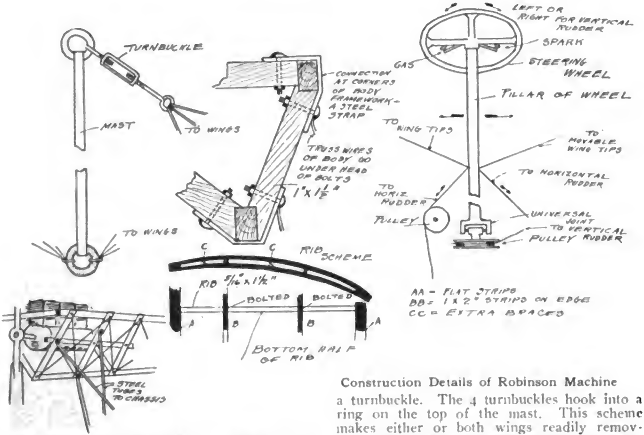
The Robinson Monoplane.

H. A. Robinson, 22 South Sarah street, St. Louis, has applied for two patents on a device to give automatic control. In the monoplane he has built he will try two propellers, each placed behind a wing, to be driven by a Curtiss 30 horse-power motor.

Following is a description of the machine as at present:

Supporting Surface—Spread, 31½ ft., each wing measuring 15 ft. by 8 ft. depth, a total supporting surface of 240 sq. ft. The wings are covered with shellaced muslin and polished. Each wing weighs 44 pounds. The ribs are of two spruce strips, 5-16 in. by 1½ in., held apart by two lateral members 1 in. by 2 in. placed on edge. A small bolt through these junctions and glue bind all together.

Twelve wires above and below, attached to either end of a mast, retain the shape of the wing. There is also a short mast extending downward near the tip of each wing. Mr. Robinson was able to walk on the wings without doing damage. The mast is of steel tubing and weighs 5 pounds. The lower wing truss wires are not capable of being tightened, merely being cut to length, and terminate in rings which hook into the mast. The top truss wires are connected in sets of 3 each to a turnbuckle. The 4 turnbuckles hook into a ring on the top of the mast. This scheme makes either or both wings readily removable. By slacking the turnbuckles the upper wires may be unhooked, when the lower wires may be removed by slipping off the wings. This takes but 30 minutes.



Construction Details of Robinson Machine

Supplementary Surfaces—Rear vertical rudder of 16 sq. ft.; rear horizontal rudder is 4½ by 10 ft.

Framing—The body is of "V" cross-section, made of spruce, 25 ft. long. Each side the triangular frame measures 1½ ft. With all truss wires (26 piano wire doubled and twisted and tied at intersections, doing away with turnbuckles) the weight of this body is but 48 pounds, and with each end supported on horses easily held five men. The spruce members are 1 in. by 1½ in.

The supports for the front and rear wheel are of light steel tubing, and bolt through the wood to the engine base. These take the shock off the frame itself.

Control—Lateral stability is secured by movable tips in the rear corners of the main plane. Levers now control all movements, but an automobile steering wheel is to replace these. Turning wheel left or right will direct the machine accordingly; swinging the wheel and its pillar to left or right will operate wing tips; moving wheel and pillar forward or backward will direct machine higher or lower. The spark and throttle levers are located on this wheel.

Power Plant—At present, 18-20 horse-power air-cooled motor, of 180 pounds weight, driving direct a 7-foot steel and aluminum propeller. But 100 pounds standing pull was obtained with this engine, not enough to accomplish flight. A Curtiss motor and propeller will subsequently be used. Ignition is by the Atwater-Kent system, Stromberg carburetor, both of which give the best of satisfaction.

Running Gear—Three-wheeled chassis, similar to Bleriot type.

Miscellaneous—Length over all, 30 ft. Weight without motor or operator, 195 pounds; total weight at present, with motor and operator, 535 pounds. With Curtiss engine and aviator weight will be about 500 pounds.

The wheels and under rigging can be removed in a half hour. The rear wheel of the chassis also steers in conjunction with the vertical rudder. Foot brakes are arranged on the front wheels.

De Riemsdyk Makes First Flights

HAMMONDSPORT, N. Y., Dec. 12.—F. L. De Riemsdyk, who recently bought a Curtiss aeroplane, made several short but good flights. Yesterday he started trials, but in his first flight he burst a tire.

Hamilton Flying at St. Joe

ST. JOSEPH, Mich.—Charles K. Hamilton, who is here flying for the Retail Merchants' Association, made three long flights in a ride over Lake Contrary race track during a snow storm.

AT MORRIS PARK

THE trials of the Beach monoplane have continued right along. On November 20 runs were made with the new wings and enlarged tail, the latter having now 75 square feet, and carries a weight of over 200 pounds. Running along the track the rear end lifted readily. The movable ends of the tail forming the horizontal rudder were slanted up rather suddenly, whereupon the tail got off the ground to a height of 5 or 6 feet, the machine slewed to the left, and on account of the speed and lift on the front planes the machine tipped to the right, with the right front wheel acting as a pivot. The right wing was broken off and smashed, but the machine did not upset. New wings, each 20 by 7 feet, are being built, giving 280 square feet instead of 225, the old wings spreading but 16 feet on each side. The weight of the machine with aviator is now about 1,250 pounds. This will be reduced some 300 pounds, so that the main planes will have to lift only 3 pounds to the square foot. A new air-cooled 4-cylinder, 2-cycle motor of 30 horse-power is expected to be substituted for the 50 horse-power water-cooled now used, which develops not over 30, geared 2 to 1, as at present. The new motor will be geared 3½ to 1, and Mr. Beach expects to get 300 pounds pull out of the big 9-foot propeller. Latham is said to get 265 pounds wtih his 50 horse-power Antoinette. New devices for maintaining transverse and longitudinal stability automatically will be experimented with shortly.

Fred Schneider has completed his second machine, and is all ready to make trial flights with his Elbridge 2-cycle motor. In general appearance the machine is a facsimile of a Wright. In his first trial a propeller sheared off the shaft and went through the planes.

From now till spring there will probably be little track work on account of the winds and the alternate freezing and thawing of the ground

Louis Rosenbaum is assembling the parts for a monoplane which he made during the summer at Cooperstown, N. Y. This is expected to be ready for trial by the end of December.

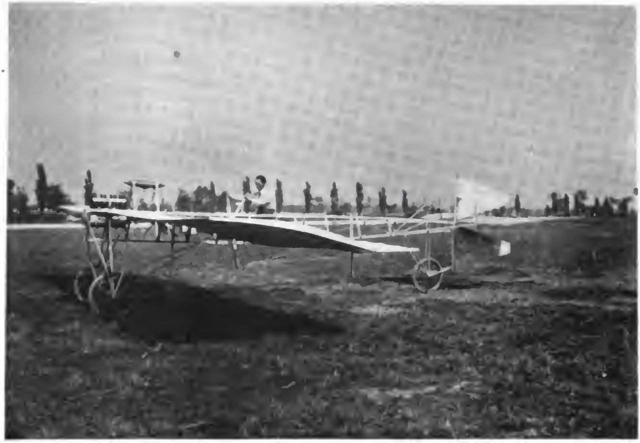
Dr. Greene Wins Prize

After Dr. William Greene's machine was run into a fence to avoid running down a bystander (see December number), the aeroplane was again brought out and short flights were made. On November 20 Dr. Greene made three flights with a passenger after having installed the Kimball light 2-cycle 40 horse-power motor. Two of the flights were the length of the track, on an even keel and much better than with the heavier motor used by Greene in his previous flights. Just as he was about to make another flight Ernest L. Jones, the publisher of the magazine AERONAUTICS, drove up and was invited to take a ride. He immediately got into the passenger's seat, behind Dr. Greene, and after a short, fast run the machine got off the ground at a steep angle. In lowering the front control to bring the machine to a level, the machine being sensitive, and at the same time the motor missing and being hit by a side gust, one wing struck a small tree. The aeroplane swerved sharply around and ran into the bank. The only damage was the breaking of the running gear, which was repaired next morning.

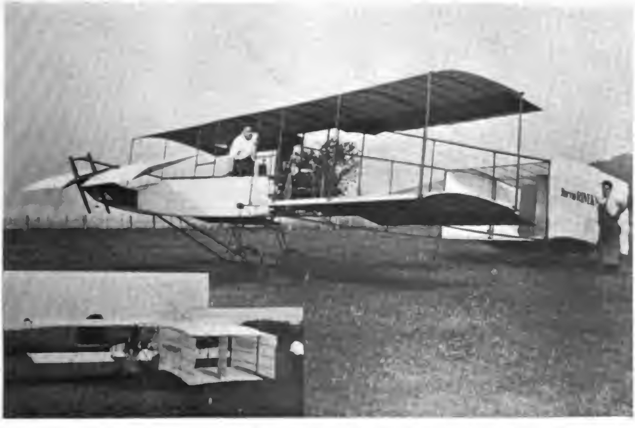
Witnesses state that in one of the flights with a passenger special attention was paid to getting off the ground quickly. The machine was held till the greatest pull was obtained and let go. The machine left the ground 30 feet distant, which is a new world's record for quick starting.

The flights brought a wealth of offers for exhibitions, ranging from $1,200 a week for

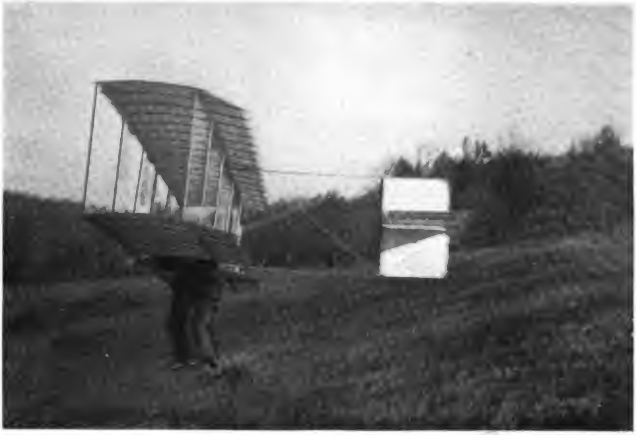
(Continued on page 21)



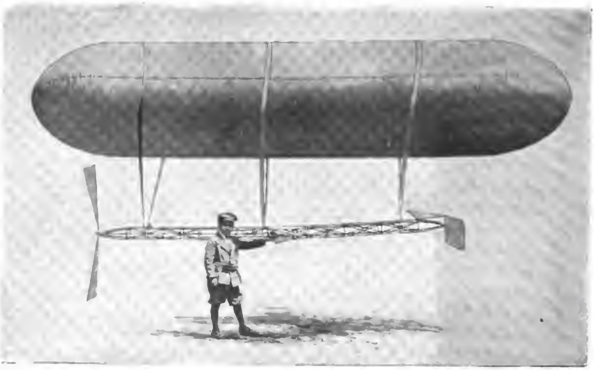
H. A. Robinson's Monoplane



The Norvin Rinek No. 2



Wittemann Glider Carries Two



Chas. B. Whittelsey, Jr.'s Model Dirigible eight weeks, to $5,000 for one week's engagement, and all were refused. The aeroplane was sold to Wilbur R. Kimball at a price less than the cost of the motor, to be used for demonstration to students of the Y. M. C. A. An offer of $1,500 for the machine itself for exhibitions was refused.

Mr. Kimball took the machine to Rahway, N. J., where F. E. Boland, himself the inventor of an aeroplane practically finished, made several short flights with it.

Dr. Greene has been awarded a special cup by A. Leo Stevens as the first member of the Aeronautic Society to carry a passenger. Mr. Stevens, it happened, was the first passenger.

DESCRIPTION OF GREENE'S MACHINE.

Planes.—Each 44 ft. spread, 6½ ft. front to rear, spaced 6 ft. apart, placed at an angle of about 6½ degrees. The finest grade of treated cotton sheeting covers the framework of the lower surface, and the finest grade of nainsook the top planes. Each rib is in two parts, the upper of ash and the lower spruce. These are separated by small spruce blocks lightened by a hole bored in the centre. The curve, 1 in 20, comprises part of a parabola, or continuous curve, the greatest depth being 17 inches back from the front edge. The struts are spruce, elliptical in cross-section. Each lateral beam is in three sections, held together with a metal sleeve. Each rib is countersunk in the beam.

Controls.—The front horizontal control, pivoted 14 ft. from the front edge of main planes, is double, the curvature being in the same ratio as that of the main planes, and measures 12 ft. spread by 31 inches length, surfaces spaced 31 inches apart. Each strut of this rudder is hinged to the lateral beams. This control is balanced "off centre," and is operated by a push rod, the rudder end of which is pivoted at the apex of a wood triangle whose base is parallel to the ribs of the rudder. Pushing out steers down, and *vice versa*.

A double surface vertical rudder is 14 ft. in the rear. This measures 5 ft. high by 2 ft. long, surfaces 3 ft. apart. Either surface is hinged independent of the other, but work in conjunction. Steering left and right is by a respective movement of the wheel.

Under the rear rudder is a rigid horizontal plane 12 ft. spread by 3½ ft. long, curve as in main planes. This adds to the fore and aft stability.

Wing Tips.—Two wing tips, 6 ft. wide by 3 ft. long, are placed half way between the main surfaces and hinged at the front edge to the two outermost front struts. Cables run from these trips along the upper and lower main surfaces to the back of the aviator's seat. This back is so made that it acts as a rest for the aviator, and at the same time every movement to the left or right operates the wing tips.

Power Plant.—At first a 26 horse-power A. & B. stock automobile motor of 320 pounds weight, giving about 21 horse-power, drove a 6 ft. diam., 4 ft. 2 in. pitch, laminated spruce direct-connected propeller and produced a standing thrust of 210 pounds at 1,200 r. p. m. (Later the Kimball 40 horse-power, 2-cycle light motor was installed and used in the last of Dr. Greene's flights at Morris Park.) A unique and original radiator was designed by Dr. Greene. It weighs but 15¼ pounds, is about 6 ft. square, and presents but ¼-inch width to the wind. It is composed of 40 vertical, flat 32-gauge brass tubes with an inside diameter of ⅛ inch. These are placed about ¼ inch apart, with horizontal heat-radiating soldered copper strips about 2 inches apart, which also furnish the necessary rigidity. A test was made to disprove the figures of several mechanical engineers, who said the radiator would not cool, and the motor and propeller were run for six hours steady without overheating.

A 15-gallon triangular gasolene tank, 1½ inches thick, is hung from a longitudinal piece of wood fastened to front and rear struts. A Bosch high-tension aeronautic magneto furnishes ignition. The spark advance short-circuit switch and throttle are located on the steering wheel, and used as in an automobile.

Running Gear.—Three-wheeled chassis, combination of skid and wheels. Machine runs on wheels and lands on two skids, the wheels springing up under the lower plane automatically as soon as the machine leaves the ground. A brake, operated by a foot lever and cables, binds on both rear wheels. The machine can be stopped almost within its own length.

Total weight of the machine is about 850 pounds without the operator.

Riggs-Rice Dirigible Has First Trial.

The Riggs dirigible, whose tent was blown down by the wind the end of November, necessitating letting the gas out of the bag, has been taken apart for the winter. The frame is hung up to the rafters of one of the sheds at Morris Park, and the bag has gone back to Mr. Stevens' shop for storage. The tent is in the hands of the repairman. Nothing more will be done with it until spring.

On the first trial a propeller broke, and in the evening, after repairs, a good test was made. Joel T. Rice and his son made both the ascents. During the night several of the tent poles snapped off, and by morning the wind was so strong that the gas had to be let out.

Blaine Selvage, of Eureka, Cal., is reported to have made a three-quarter mile flight in his aeroplane with a 20 horse-power motor of his own construction.

A. Leo Stevens, the balloon builder, is going in for aeroplanes, too. Unbeknown to anyone else he has been quietly laying his plans for a monoplane to incorporate some protected features of his own invention.

Clifford Hendrix, of Brooklyn, son of ex-Postmaster Hendrix, is reported to have bought a Bleriot and a Farman machine.

Louis J. Bergdoll, a well-known Philadelphia brewer and owner of racing cars, has bought the Bleriot "elephant" from the Wanamaker show at a price of $5,000. The machine is now in Philadelphia.

Paulhan Flies High

FOREIGN LETTER

$25,000 for a Military Aeroplane in Australia—England Has Big New Rival Body—Wonderful New Height Records—German Wright Company—New Prizes in Germany—$1,250,000 for Aviation in Russia—Aviators Protest Arbitrary Control of Exhibitions by French Club

Algeria.

Exhibition flights have been made by two operators on Bleriot and Voisin machines.

Australia.

The Department of Defense of Australia has offered $25,000 to the inventor of a flying machine adjudged by the Minister for Defense to be the best and most suitable for military purposes.

The inventor must have been a resident for at least two years and be a British subject. The machine, so far as possible, must be constructed in Australia.

The machine must be able to rise from the ground without appreciable delay under its own power, without the aid of special starting apparatus, and must be able to alight without damage. It must be capable of poising or remaining over a given area for what would be sufficient time to enable observations to be taken. Speed not less than 20 miles per hour, with sufficient fuel to remain in action five hours.

Test flight over course not exceeding 20 miles, machine to return to start without touching earth. Trial must carry two persons, one of whom must be available for observing, total loading above weight of machine to be not less than 350 pounds.

A great deal is left to the judgment of the Minister, whose decision must be accepted as final.

Belgium.

The Antwerp meet closed on Nov. 3. The longest flight was by Rougier, of 50 kilometers in 1 h. 16 m. He made a fine height flight, reaching 270 meters. His winnings amounted to $6,500 plus 5 per cent. of the gate receipts.

England.

ENGLAND HAS BIG NEW AVIATION BODY.

The Motor Union, the great automobile organization, and the "A. A. A." of England, has resolved to place its extensive organization at the disposal of those interested in aviation. The union, which has a membership of 14,000, an annual revenue of over $50,000 and accumulated funds amounting to $55,000, is in a position to give effective assistance to those interested in aviation. This development will, it is anticipated, render unnecessary the multiplication of new organizations, and secure that the funds contributed by those interested shall be spent directly in the extension of the movement, and not principally in the purely organization expenses of small competing societies.

In addition to the ordinary advantages of membership, the Union is in a position to offer special benefits, such as the legal advice of the Union's attorneys, grounds, etc. These benefits will be rapidly extended as the membership increases.

The general committee of the Motor Union has already sanctioned the spending of $5,000 upon the aviation side of the Motor Union activities.

PAULHAN MAKES NEW HEIGHT RECORD.

On Nov. 5, Paulhan gave a two-day exhibition at Sandown Park. During the flights he rose to an official height of 977 ft., making a new official record. The motor was shut off as high as 400 ft. and a graceful glide made to earth. Paulhan shows consummate skill and his turns were made at acute angles.

HON. C. S. ROLLS WINS PRIZE.

The Hon. C. S. Rolls has succeeded in flying a circular mile in his Wright machine, built by Short Bros., winning the first of the British Aero Club's $250 prizes.

He decided to try another spot, the British Aero Club's auxiliary grounds at Eastchurch, Sheppey, for his trials, and proceeded to fly his machine thereto, a distance across country of five and a half miles. One stop was made to adjust the front rudder, and started again on temporary rails.

On the 26th of November, Mr. Rolls flew seven miles. Another Wright aeroplane, that of Frank McLean, has made short flights at Sheppey.

Moore Brabazon has also improved his flights in a Short machine, getting up to three and a half miles. On one occasion he carried a pig with him.

Colonel Cody has removed his experiments to Aintree race course, and will try for the $5,000 Liverpool-Manchester prize. Several short flights have been made, one with a passenger.

The Rev. Sidney Swan, with a machine resembling the "Demoiselle," is also experimenting on the Aintree track.

The Aero Club of the United Kingdom has nearly reached the 1,000 members mark. The club is acquiring new quarters, with various rooms for the convenience of the members.

Alec. Ogilvie, who has a Wright machine, has been able to make short flights, though one was about nine miles, the first half of November. In a later flight a piston drove through the crank case and the aeroplane glided to the ground, sustaining some injury.

Egypt.

The Cairo meet is scheduled for Feb. 6-13. De Reimsdyk will be a competitor with a Curtiss machine. The Automobile Club of Egypt is also organizing a meet to be held in February. Jean Gobron, who flies a Voisin, has taken his machine to Cairo for the winter, and anticipates flying around the Pyramids.

France.

HIGH FLYING—NEW RECORDS.

On Nov. 19, at Chalons, Paulhan, Farman machine, tried for a new world's altitude record, attaining a height of 360 meters (1,150 ft.).

Latham on a new Antoinette tried to beat Paulhan, and attained 410 meters (1,330 ft). The following day Paulhan, in a cross-country flight from Mourmelon, reached 600 meters (1,960 ft.), covering a distance of about 60 kilometers in 55 minutes.

On Dec. 1, Latham succeeded in spite of a 36-mile wind, with rain as an added attraction, in,flying up to a height of 475 meters (1,550 ft.) The flight lasted in all 32 minutes.

Santos Dumont, at Issy, has put a 40-horsepower motor on his "Demoiselle" and obtained extraordinary speed. The speed caused Dumont to come down, but he could not stop before he hit a fence, damaging the wings.

M. Levavasseur, the designer of the Antoinette engine, has retired from the Antoinette company, and, with M. Gastambide, will exploit the machine in Great Britain.

Many more purchasers of French aeroplanes have begun practicing at Chalons.

FLYING RECORDS.

The "Commission Aerienne Mixte" have grouped, divided and subdivided records as follows:

Two main groups—(1) flights made in a closed circle, (2) those made otherwise. These divide into (A) records made without landing, (B) records in which machine touches the ground during the flight, (C) records made alone, (D) records made with passengers. And these subdivide as follows: (1) Longest distance, (2) longest duration, (3) best speed over 1, 2, 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 150, 200, 250, 300, 350, 400, 450, 500, 750 and 1,000 kilometers, progressing by 250 kilometers above 1,000; (4) best speed in ¼, ½, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 18, 21 and 24 hours and every 12 hours beyond; (5) best speed expressed in kilometers per hour; (6) greatest height reached, same measured above the starting point.

For the "Prix de la Tenue de l'Air," awarded for the greatest cumulative distance in official events, between May 15 and Dec. 31, 1909, Paulhan stands first, with 435.5 kilometers; Tissandier, in a Wright, second, 315.4 kilometers; Bleriot, Delagrange and Rougier come next.

Chalons continues to be a busy aviation camp. Latham has been taking up, among others, Mme. de la Roche in the new two-passenger Antoinette.

This latest machine is used in instructing purchasers. Mme. de la Roche has made many flights, one lasting 38 minutes, and took up her instructor in a Voisin machine.

No flights of particular note have been made during the month at Chalons, save those of Latham and Paulhan.

Lambert's "Eiffel Tower" Wright has been sold.

PILOTS CHANGE DURING FLIGHT.

Farman and Paulhan have tried shifting the piloting during flight. Paulhan took his place behind Farman and they were able to relieve each other without trouble. This will be advantageous in long flights.

HUNTING IN AN AEROPLANE.

Latham now goes hunting via aeroplane. On Nov. 23 he flew in his Antoinette from Chalons to Berru, near Rheims, about 20 miles, to attend a shooting party. After killing a few birds, he returned with the game, and, of course, his gun.

Farman and the Voisins are arguing as to who has done copying, each claiming the other has profited by the experiments made.

FERNANDEZ KILLED.

On Dec. 6 Antonio Fernandez was instantly killed in his own type biplane, mentioned last month. He apparently did not heed the demands of safety and flew with a defective part of his machine tied up with string. After going a short distance, he made too short a turn and the machine landed on top of him.

Germany.

COMPANY ORGANIZED TO MAKE WRIGHT AEROPLANES.

Deputy Consul-General Simon W. Hanauer reports from Frankfort that a limited stock company has been formed in Berlin by leading German industrial concerns for the purpose of manufacturing flying machines of the Wright system.

Wilbur and Orville Wright have given the new company, whose firm name is Flugmaschine Wright, G. m. b. H., the right to work all their patents, models, etc., for making aeroplanes in Germany. The new company has a working capital of 500,000 marks ($119,000); its principal participants are Krupp Company of Essen; A. Borsig Machine and Locomotive Works; Hugo Stinnes, coal and iron operator; Delbrueck, Leo & Co., bankers; Ludwig Loewe & Co., machine, arms and tool manufacturers; Aerial Vehicle Company; Motor Air Locomotion Experimental Company; the General Electric Company of Berlin, the Electro Chemical Company of Bitterfeld. Captain von Kehler will be the managing director of the new company.

NEW LANZ PRIZES.

Dr. Carl Lanz has offered two prizes of 10,000 and 7,000 marks for the next two German machines to duplicate Grade's performance when he won the Lanz 40,000 marks, recorded last month. The Royal Automobile Club and the German aero clubs have also offered three further prizes of 2,000, 1,500 and 1,100 marks under the same conditions.

GRADE FLIES HOUR.

On Nov. 15 Grade made a flight of 54 minutes in his miniature aeroplane. On the 23d he flew as high as 140 meters.

FLIES FOR TWO HOURS.

On Nov. 5 Captain Englehardt flew his Wright machine for 1 hour 53 minutes.

On Dec. 11 Captain Englehardt met with an accident in his Wright machine. The horizontal rudder is said to have failed and the machine overturned.

There is another new monoplane flying in Germany, that of Lieutenant Gohler, a military officer, near Cologne. The flights have so far lasted only as long as four minutes.

The end of October and the first part of November secret military trials were made of the "Zeppelin II," the "Gross II," the "Parseval I," "Parseval III," near Cologne. On Oct. 30 all were in the air for 10 hours, with bad weather. On the night of the 2d and 3d of November an imaginary attack was made on the fortress near Coblentz by all but the "Parseval III." The course covered about 250 kilometers and the duration was nine hours.

The "Gross II" and the "Parseval I" in a five-hour altitude test operated at a height of 1,200 metres. Two hundred and seven men of the dirigible corps and five officers took part.

On Nov. 14 the "Parseval III" made a 270 kilometer trip from Bitterfeld to Gotha. After several hours' fight with wind and snow, it had to be deflated and returned by rail.

A new dirigible has begun trials, the "Leichlingen." The non-rigid envelope has a capacity of 2,900 cubic metres, 56 metres long, maximum diameter of 10 metres, two horizontal planes attached to rear of bag. Power plant, Benz 125-horsepower motor, driving a propeller of 4.5 diameter at 400 revolutions per minute, placed at front end of frame.

ANOTHER NEW AIRSHIP.

Germany's army now has a third Gross dirigible. The envelope has a capacity of 7,500 cubic metres, and has a power plant of four Korting motors totaling 300 horsepower.

Two Germans, Messrs. Amerigo and Thiele, have been able to make short flights with a biplane at Leipsic.

Italy.

The Italian military dirigible made a 500-kilometer trip Oct. 31 from Bracciano to Naples and return. A stop was made at Rome, where Lieutenant Rosetti met his death by being struck with a propeller blade.

Russia.

$1,250,000 FOR AVIATION.

It is reported that the budget of the Minister of War includes $1,250,000 to be expended on aviation. The first of five aeroplanes, said to resemble the Wright, is ready for trial at the military balloon grounds at Gatchina.

Exhibition flights have been made by M. Guyot in a Bleriot and Baron de Caters at the Imperial race track at St. Petersburg.

The latter had to land on top of a fence to avoid hitting some "cops."

Spain.

On Nov. 5 the "Espana," the new Spanish dirigible undergoing first trials at the factory in France, started on a long trip, but after running for five hours it met with trouble in the power plant and had to be deflated.

NEXT MONTH

Drawings and Description Santos-Dumont aeroplane, Table of Records, Ascensions, Pacific Coast News, etc., will be printed in the February Number, having been crowded out in this.

FOREIGN AVIATORS OBJECT TO USURPATION OF RIGHTS

Many New Rules

F. A. I. Rulings.

At the Zurich meet of the F. A. I. four principal rules were made relating to aviation meets. By entering an event the entrant must take part. No entrant can enter in another meet for the same date and then pick the better one. The entry is made by the pilot and all prizes and records go to him personally. Prize money and awards must be sent to the winners within 15 days, the national F. A. I. club to by the promoters, which must be ratified by the F. A. I. representative in the country of the meet. The decisions of the judges can be appealed to the F. A. I. representing body within 15 days. The national F. A. I. club to enforce penalties against competitors who make false announcements with regard to his performances. Competing machines must have no other trade announcement than the name of the constructor.

Aviators Object to C. A. M.'s Arbitrary Rule.

A good many aviators are not altogether satisfied with the decisions made by the "Commission Aerienne Mixte." One prominent aviator expresses himself very strongly. He says: "It seems to me the C. A. M.'s duty is of an exclusively sporting character. It is the supreme authority in France on all matters connected with the bona fide nature of aerial exploits, but I fail to see it has any right to concern itself with the commercial side of the question. No doubt the C. A. M. was inspired with a desire to be useful to aviators when it decided not to recognize any aviation meeting the promoters of which seek a personal pecuniary advantage, and also when it went so far as to claim the right to exercise financial control over the meetings it may authorize. But such pretensions are beyond its competency, and, what is more, I believe they are calculated to prove detrimental and not advantageous to the interests the C. A. M. would serve."

Another well-known aviator writes: "Does it not appear most probable, if not certain, that most of the municipalities and most honorable persons desirous of aiding in the development of aerial locomotion by the organization of aviation meetings will rather abandon the idea than submit to an irksome if not humiliating financial control? Moreover, I do not understand why even those speculators who seek pecuniary profit in the organization of aviation displays should be discouraged. They bring grist to the aviator's mill, and it is for the aviators to look after their own pecuniary interests. I could say a good deal more, but I think it is sufficient to point out that the C. A. M. will have encroached on the commercial field, which does not belong to it, if it maintains its decisions."

WHAT CAUSED THE TROUBLE.

From Jan. 1 next the societies represented by the C. A. M.—that is to say, the Aero Club

(Continued on page 35)

WITH THE LIGHTER THAN AIR

Many Ascents for New England

Eighty-three ascensions have been made in New England during the past season, as follows: Pittsfield, 28; North Adams, 23; Fitchburg, 15; Lowell, 7; and the rest were divided among Springfield, Rutland, Vt., and Nashua, N. H.

Gordon Bennett 1910 Balloon Race

Denver is bidding for the Gordon Bennett balloon race to be held some time in October, 1910. While geographically a good location, Denver may be barred on account of its high altitude and wind currents. An investigation as to the specific gravity of its gas and the amount available is now being prosecuted.

Another contestant is Kansas City, where Geo. M. Myers, president of the Priests of Pallas, is starting a campaign, but Kansas City gas is of a lower order.

DENVER AND ST. LOUIS COMPARED.

In view of the fact that Mr. Bishop in a recent public utterance committed himself in favor of holding the next balloon race in Denver, some data compiled by Albert Bond Lambert, with the aid of the Weather Bureau of both St. Louis and Denver, is interesting.

Every aeronaut knows that on account of the resultant contraction and expansion of gas uneven temperatures are disadvantageous to long-distance ballooning. It appears that in Denver the variation between night and day temperatures is on an average of 30 degrees for October, as against 18 for St. Louis in the same month.

The weather reports from 1902 to 1906 show that the average winds at Denver blow toward the northeast, but that there is always a fair chance of an easterly wind that will carry balloons into the mountains. The average velocity of the wind during the same years for the months of October and September was only 7¼ miles an hour.

During the month of September, in Denver, the average minimum night temperature has been 48 degrees, with the maximum day temperature 77 degrees. In October the average day temperature is 65 and the night 37 degrees.

In the same months the average in St. Louis are 79 by day and 61 by night, and 68 by day and 50 by night, respectively, showing a much lesser variation.

Dirigible Licenses of Aero C. A.

The Aero Club of America has formulated rules for the issuance of dirigible pilot licenses with the following requirements. Capt. T. S. Baldwin has been granted license No. 1. Applicant must be member, twenty-one years old.

> The applicant must state and must prove to the satisfaction of the board of directors that he has personally made at least ten ascents in dirigible balloons; that he has been accompanied on at least five of these trips by one of the licensed dirigible balloon pilots of the Aero Club of America, and that on at least two of these trips that he has operated the dirigible balloon on his own responsibility from start to finish, and that on both of these last-named voyages has accomplished a distance of at least 5 kilometers, including a return to the point from which he started. The application must be accompanied by a statement of the licensed pilot describing the manner of the applicant's handling of the dirigible balloon.

The other conditions are the same as in the conditions for aviation pilots printed elsewhere in this issue.

America's Youngest Constructor

Chas. B. Whittelsey, Jr., of Hartford, Conn. age ten, son of Mr. Chas. B. Whittlesey, superintendent of the Hartford Rubber Works Company, began experimenting with dirigible balloons some time ago, using the smallest sort of a balloon to commence with. Gradually his interest grew, and the balloons were made larger and larger until now he has a dirigible 18 feet long by 4½ feet in diameter fitted with a Porter motor, which is capable of being directed from the ground.

The illustration shows the balloon inflated with coal gas at the Springfield Gas Works. In Hartford water gas is used, which is too heavy for aeronautical purposes, but when filled with coal gas the balloon showed excellent possibilities. A special kind of cambric covered with Hartford Aero Varnish is used, and the total weight of the balloon is only 11 pounds. The framework is fitted with aluminum wire, and the motor adds but 3 pounds to the weight.

The young man is an enthusiastic member of the Junior Aero Club of America, and his balloon was an important part of the exhibition of The Hartford Rubber Works Company at the recent Aero Show in New York Because of his experiments, The Hartford Rubber Works Company have been enabled to put on the market an excellent Aero Varnish, and are also prepared to supply Aero Tires of various sizes and construction suitable for different weights and styles of cars.

There is now being constructed at The Hartford Rubber Works Company a 50-foot gas bag for further experiments of the young gentleman, and in the spring he hopes to have something particularly good as a result of his efforts.

Pittsfield to Have Balloon Shed

A balloon shed for Aero Park is the latest announcement made by the Pittsfield Gas

Company. A large shed has been purchased, and it will be remodeled into a five-room building. Four of the rooms will be used for the storage of balloons, and each room will be 8 by 10 feet. Each room will hold a balloon and all its equipment, and the various rooms will be provided with a lock and key. An attic or loft will be used for the repairing of balloons. The new balloon shed will be in readiness by the first of the new year. This will make one of the finest balloon parks east of the Mississippi.

The new gas holder under construction will be in readiness about January 1, and after that date the company will be in a position to supply balloon gas at a moment's notice. The new holder will hold 750,000 feet of gas. If there are enough ascensions to warrant it the gas company will make and store balloon gas in the 250,000-foot holder.

Will Make Aerial World Tours

James W. Price, who only returned home to San Jose, Cal., a month ago from a tour of the world with his balloon and airship, is leaving for Australia in about three weeks with his dirigible balloon "Messenger," a small gas balloon, a large captive balloon and two hot-air balloons. He has already made seven tours of the world with his balloons and airships, and on this new trip will visit Australia, India, China, Japan, Java, Straits Settlements, South Africa, South America and other countries. Mr. Price is also building a monoplane, to be completed in about three months.

Chas. J. Strobel is sending three airship outfits to Australia the end of December. Another airship is touring the South giving exhibitions.

Government Balloon Goes 280 Miles.

November 8.—The research observatory of the U. S. Weather Bureau has just brought to a close a sounding balloon campaign in the west. Two stations were occupied, one at Fort Omaha, Neb., where the signal officers kindly supplied the bureau with hydrogen gas, and the other at Indianapolis, Ind. The object, as one doubtless knows, is to send up light rubber balloons carrying meteorological instruments on which a record of the pressure the temperature and the moisture is made as the balloon goes up. When the balloons get in the rarified air of the upper regions they burst and the instrument is brought safely to the ground by means of a parachute. Thirteen ascensions were made at Omaha, Neb., and seven at Indianapolis, Ind.

The farthest drift of any of them was about 280 miles from the starting point. Most of them fell within a radius of 50 miles of the starting point.

THE AERO CLUB OF NEW ENGLAND

By Alfred R. Shrigley, LL. B.

THE Aero Club of New England held its annual banquet at the Boston City Club on the evening of Nov. 22, 1909, and over 80 members and their friends were present. Prior to the banquet a business meeting was held, at which the following officers were elected: President, Charles J. Glidden; vice-president, Timothy E. Byrnes; second vice-president, Nathan L. Amster; treasurer, Harry G. Pollard; secretary, Alfred R. Shrigley. Many important matters were transacted, among them the increasing of the board of directors from 7 to 11 members and the appointing of an aeroplane committee and a committee on dirigible balloons.

The guest of honor at the banquet was Cortland F. Bishop, president of the Aero Club of America and vice-president of the "International Aeronautical Federation." Mr. Bishop spoke at length during the evening on the question of the international aviation contest, which is to take place in the United States in October, 1910, and suggesting the idea to the club members that Boston should be one of the places in which the contest should take place, his idea being that all the United States should be given an opportunity to witness this interesting event, and that the same be held in four cities during the month, thereby giving an opportunity for a large part of the citizens of the United States to witness the contest. Mr. Bishop offered to the Aero Club of New England a cup, which is to be known as the "Bishop cup," to be awarded to the pilot making the longest flight in a balloon during the year 1910, who starts from a point in the New England States. This cup was accepted by the club, and many interesting events in the competition will no doubt take place during the coming season.

Among the other speakers of the evening was the retiring president, Prof. William H. Pickering of Harvard University, and Charles J. Glidden, the incoming president.

The Aero Club of New England will purchase a glider for the benefit of the members who intend to take flights in the club's aeroplanes during the coming season. The glider will be used for the purpose of instructing members in the methods of balancing in the air. A committee has been appointed, consisting of H. Helm Clayton and J. Walter Flagg, to consider the advisability of purchasing an 80,000 cu. ft. racing balloon, the same to be entered on behalf of the Aero Club of New England in the international balloon race which will be held in 1910.

The Aero Club of New England intends to hold informal dinners once every month during the coming season in order to bring its members into closer relation with one another and to promote discussion on scientific matters in air navigation. Many of these dinners will be attended by gentlemen of international reputation in aviation, who will speak to the members on topics of interest.

News In General

Enthusiasts Loosen Up

Lieut. Frank P. Lahm, chairman of the Selfridge Memorial Committee of the Aero Club of America, is making an urgent appeal for funds to complete the amount necessary to complete the work on the shaft which is to be erected at West Point.

Three hundred dollars is still needed, and though some very generous subscriptions have been made, the number of contributors has been small, and it is felt that many more interested in aeronautics will gladly subscribe if their attention is called to the matter.

The design has been decided upon. It is to be a Barre granite stone, suitably mounted on a base, the whole about 6 feet high and 8 feet long, with a bronze tablet on one side giving the principal facts of Lieutenant Selfridge's life and death.

Send subscriptions to Lieutenant Lahm at the Aero Club of America, 12 East Forty-second street, New York.

Boston Y. M. C. A. Has Aero Course

Following the lead of the West Side Y. M. C. A. in New York, the Boston Y. M. C. A., 458 Boylston street, has inaugurated a department of aeronautics with a faculty consisting of H. H. Clayton, A. A. Merrill and Winthrop C. Hosford, the latter to lecture on motors, Mr. Clayton on aerostation, and Mr. Merrill on aviation. Professor Pickering and Charles J. Glidden are on the advisory board. It is the purpose of the school to put students in touch with all that is known on the subject of aeronautics and to give them such instruction as will enable them to comprehend theory and practice readily. As soon as the "art develops to the proper stage"' air lessons will be given to the would-be aviators. In the meantime those desirous of specializing in aerostation will be enabled to make ascents and become pilots through arrangements to be made with the Aero Club of New England.

The cost of the aeronautic course is but $20. The opening lecture was made by H. H. Clayton on November 23.

Cornell's Course in Aerial Engineering

The club which was organized by students a few weeks ago will see one of its objects accomplished next year, for Sibley College is going to give a course in aerial engineering. The course will be a technical elective, open to seniors, and will be in charge of Professor McDermott, whose specialty is naval architecture. The sciences of air navigation and water navigation have some important principles in common.

Lectures

Albert Bond Lambert, secretary of the Aero Club of St. Louis, gave an amusing and instructive talk on ballooning at a recent dinner of the Paint, Oil and Drug Club, in St. Louis, with the result that the club adopted resolutions to aid the Aero Club of St. Louis in connection with other civic organizations in an endeavor to secure the 1910 *Coupe d'Aviation* meeting for St. Louis. E. Percy Noel, the magazine writer, who conducts a regular department of aeronautics for the *St. Louis Globe-Democrat,* followed Mr. Lambert with a condensed version of his illustrated talk on "Practical Air Travel." Mr. Noel is booked by the aero clubs of several Western cities this winter. His most popular talk is profusely illustrated with motion pictures and lantern slides.

* * *

John Berry, who won the national championship balloon race last June, lectured on ballooning before one of the grammar schools in St. Louis recently. The superintendent of schools protested that the aeronaut had not received any authority from him to do so. Mr. Berry had planned to lecture at all the public schools in the city.

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Wilbur R. Kimball lectured November 20 before the Medical Alumni Society of Philadelphia on the art of aviation, showing moving pictures of the Rheims contests and some taken from a balloon. The room was artistically decorated with models of the various successful flyers belonging to L. E. Dare, who is conducting a series of exhibitions and educational talks with these models at various department stores and aero organizations through the country.

• • •

A. A. Merrill lectured on "Aerial Navigation by Aeroplane" at the "1915" Boston Exposition, on Nov. 11.

He described the way in which air reacts against a surface moving through it, how the position of the centre of pressure varies with a change of angle and speed and how this affects the stability of the surface. The principles involved were illustrated with simple paper gliders.

Gliding flight was then taken up, details of construction and methods of operation treated, and pictures of the work of Lillienthal, Chanute and the Wright brothers shown. Power machines were treated next and pictures of all the types now in existence will be shown.

A short discussion of the limitations, possibilities and general effect of these machines on sport, war and civilization closed the lecture.

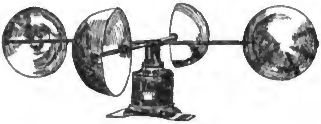
H. H. Clayton talked on "Aerial Navigation by Balloon," leading up to the dirigible and giving lantern slide illustrations of the great airships of foreign countries.

Trade Notes

FLYING MACHINE SPEEDOMETER.

The newest thing in the flying accessory line is the speedometer, or correctly, anemometer, just about ready to be put on the market by the Warner Instrument Company.

It is designed and built on the well-known principle of the Auto-Meter, in fact, is practically a Model F instrument inverted and provided with the usual anemometer spider and cups. The scale is, of course, especially calibrated. The instrument is very small, measuring only 17½ inches from outside to outside of the cups, and weighing complete only 2 pounds. It is thoroughly practicable and accurate, and will show wind velocity from zero to 60 miles an hour. It is designed to be attached to the frame of the aeroplane within sight of the driver, and in this position will accurately indicate its speed. One of these has been in use on the Curtiss machine purchased last summer by A. P. Warner.



Send along your orders.

AERO SUPPLY HOUSE FOR ST. LOUIS.

It is significant, as it reflects the progress of aviation, that a supply house has been established with headquarters in St. Louis, to deal exclusively in aeronautic supplies. The Aeronautic Supply Company, Olive street, St. Louis, undertakes to provide "everything for the aviator." A comprehensive catalog is now on the press and will shortly be issued. Inasmuch as this catalog has been compiled at considerable expense, and is in itself of great value to the intending aeronaut or aviator, whether he purchases supplies from the new company or not, a price of 10 cents the copy has been fixed for it. Readers of AERONAUTICS will be able to secure this catalog free by filling out a coupon printed in the advertising section of the current issue. In years to come the Aeronautic Supply Company will no doubt be proud of its title, "The first in the Western Hemisphere"; in the meantime it will be to a certain extent altruistic, helping the inventor and builder to attain the air levels. In the catalog, everything from a turn-buckle to a fully equipped aeroplane is listed.

TRUNKS FOR AEROPLANES.

Mr. Joseph Berg, a member of the Aeronautic Society, and very familiar with different types of motors, aeroplanes, etc., is one of the firm of Ajax Trunk and Sample Case Company, 91-93 Mercer street, New York. This firm are manufacturers of auto. trunks and luggage carriers.

Mr. Berg has devised a practical trunk for the safe transportation of motors, planes, propellers, etc.

The trunk for carrying the motor is so constructed that the motor can be easily removed, as well as being perfectly protected, while in transit.

This new and practical method of transporting machines of the air will surely appeal to anyone as a great improvement on packing in wooden cases, as has been done heretofore.

The above firm also make trunks for monoplanes and dirigible balloons when folded for transportation.

NEW MOTOR CATALOG

The Machine Department of the Easton Cordage Company, Easton, Pa., has issued its new motor catalog. They are confining themselves to but one motor (see November number for description), a 40-50 horse-power, selling at $1,200, complete with Bosch magneto. Although delivering 50 horse-power at 1,000 r. p. m. a greater power is developed at a higher speed. With the smaller sized engine the company built a 30-40 horse-power; a standing thrust of 271 pounds was obtained at 1,020 r. p. m., with a 7½-foot propellor of 4 feet pitch. Every finished motor is subjected to a shop test of three hours, and the power curve must remain constant throughout the test.

The motor now on the market has undergone considerable modifications, viz.: The bore has been increased to 4 feet, making the size 4x4; head and shell cast in one piece; force feed oil system and mechanically operated intake valves, and delivers 50 horse-power at 1,000 r. p. m.

AEROPLANE CATALOG.

The Scientific Aeroplane & Airship Company, of 361 Broadway, New York, has gotten out a little pamphlet illustrating the aeroplanes which the company proposes to build on order. Two models of monoplanes are listed—the first a 50 horse-power flyer of 1,000 pounds' weight, designed for two people, price $7,500; the other is the one-man machine of 25-30 horse-power of about 500 pounds weight, at an outlay of $5,000. Two models of biplanes are described at the same prices as above. Both monoplanes and biplanes are controlled "by a new patented form of duplex steering wheel, which steers the machine up and down as well as sideways with perfectly easy and natural movements. The machines are also provided with a novel and practical device for automatically maintaining the equilibrium at all times, so that all the aviator has to do is steer the machine up and down and to right and left."

The company was organized by Stanley V. Beach, aeronautic editor of the *Scientific American*.

BUSINESS WITH WITTEMANN.

Twelve gliders are now going through the shop of Wittemann Brothers on Staten Island. So far, some fifteen or twenty have been sold to purchasers scattered all over the United States. Two power machines are now being built to the design of inventors, and the Wittemanns are starting a power machine of their own, which will probably be placed on the market after experiments with it. This will be of the biplane type, somewhat similar to the Voisin. A power-driven model is being constructed for George Bold, with two steam engines, the whole apparatus weighing only about 70 pounds. Nine men are now employed, and it is but a year ago that the first glider was built.

HARTFORD TIRES AND VARNISH.

Good sale has been found for the special aero tires put on the market by the Hartford Rubber Works Company, as well as for the varnish sold for coating aeroplane surfaces.

New Books.

Fliegende Menschen, by Lieut.-Col. H. W. L. Moedebeck. (Otto Salle, 1909; pp. 98, ill., 3 marks.) A most useful book and fills a great demand. The only regret is that it is published in German. A quarter of the book is devoted to the history of aviation but the remainder gives a brief and accurate description of the present state of the art, with a record of the achievements of the most advanced flyers. All theoretical data are omitted, giving only actual results.

An excellent handbook of aerial navigation brought up to date is *The Conquest of the Air,* by Professor A. Lawrence Rotch. Professor Rotch's point of view is that of the meteorologist rather than of the inventor or mechanician. As director of the Blue Hill Observatory he has had many years' experience in the study of atmospheric currents and temperatures by means of kites. His chapter on "The Ocean of Air" will be found helpful to amateur aviators. The remainder of the book is made up of a history of aerostation, descriptions of the dirigible balloon and the flying machine respectively, and a brief forecast of the future of aerial navigation.

Aerial Navigation of To-day, by Charles C. Turner. (London, Seely & Co., 1910; pp. 327; ill., 5s net.) A modern Astra Castra, it is the first modern English written book to give a reliable record of the beginnings, rise and development of the history of aerial navigation.

Vehicles of the Air, the newest book on aeronautics, is all that its title page sets forth, "a popular exposition of modern aeronautics with working drawings." It is by Victor Lougheed, a prominent automobile engineer, former editor of *Motor,* etc.

The technical matter is treated in a broad and analytical method without recourse to mathematics, while an extraordinary amount of information helpful to the designer and experimenter is crowded into its 479 pages. The illustrations and drawings are particularly fine and show features of some of the leading flyers not previously available. As a book of reference it can hardly fail to win ready appreciation.

One chapter is devoted to the atmosphere, one to all the types of lighter-than-air machines, going into all the minor details, one to heavier-than-air machines, one to aeroplane details, chapters on propulsion, power plants, transmission elements, bearings, lubrication, starting and alighting, materials and construction, typical aeroplanes, accessories, miscellany and flight records.

Every possible item of construction is carefully considered and the scale drawings and photographs of successful machines offer a veritable mine of information for the builder and experimenter and man-on-the-street alike.

This is the one book that everyone must have.

Aeronautics, by M. K. Kasmar, is one of the newest books treating of the subject of mechanical flight.

It presents a general fund of information derived, evidently, from a wide range of study and observation, and sums up the matter with a unique tabulated system of synthesis and analysis, without recourse to mathematics, and in the simplest language.

Aeronautical Exhibition for Chicago

Arrangements are being made to lease the Coliseum, Chicago, the latter part of February to hold a five-day aeronautical exhibition. The expenses of all exhibits will be paid both ways, and it is hoped that a goodly number of inventors and constructors will allow their machines to be shown.

Western Aero Federation.

St. Louis, Dec. 11.—A Western Federation of Aero Clubs with headquarters in St. Louis is being organized by Albert Bond Lambert of the Aero Club of St. Louis.

The prospective members of the federation are the clubs of St. Louis, Indianapolis, Dayton, Denver, Peoria and Los Angeles, with the probable addition of clubs in Edwardsville, Ill., and Kansas City now being formed.

New Suit Against Aero Club

A suit has been brought by Gutzon Borglum and Thomas A. Hill in Part I. of the Special Term of the Supreme Court against C. F. Bishop, as president of the "Aero Club of America, an unincorporated association," the plaintiffs claiming that they are not members of the stock company of the same name. This is the second legal action brought by the "insurgents."

The action is for the purpose of setting aside the recent election on the grounds that there was not a proper election; that the club's ticket was not in accordance with the by-laws; that the administration forced the mutilation of the opposition ticket and the removal therefrom of the names of the candidates for office;

that no officers have been elected up to the present time (November 6), and that therefore a new election should be had; that at such election proxies shall not be used, as there is no authority for their use in the by-laws; that the members voting thereat shall be those properly elected to membership in accordance with the by-laws; that those who were prevented from taking part in the last election for non-payment of dues, unnotified of their deprivation of membership, be allowed to pay their dues and vote.

THE FORMER PROCEEDINGS.

In filing answer to the application of October 31 for an injunction, made by William J. Hammer, to restrain the Aero Club of America from voting proxies at its annual meeting, and from illegally electing to membership applicants therefor, President Bishop denied that there is an unincorporated body of men known as the "Aero Club of America," but that there is only the stock corporation. It was claimed in the papers of Mr. Hammer that the members formed an unincorporated body separate and distinct from the stock corporation of the same name.

Also, Mr. Bishop admitted that members have been granted membership by the board of directors without due notice having been sent to the other members, and urges that the power to elect members is vested in the directors, and that where notices were sent to other members containing the names of those proposed for membership, such notices were sent by courtesy only and does not affect the validity of their election. He also believes the right to vote by proxy is "inherent, both as a matter of custom and law."

In the affidavit submitted by Mr. Bishop on the application for an injunction statements are made which are said to contradict some of those in the attached answer.

In Bishop's affidavit he said that at a special meeting on October 28, two days before the application was formally made by Hammer, though an inkling of the proposed action was public property, the directors added a section to the by-laws to the effect that at all meetings of the club and at all elections proxies may be voted; the affidavit admitting that prior to this the by-laws contained no express right to vote by proxy or at all, but that as a matter of practice at members' meetings all members have been allowed to vote by proxy or in person, and the stockholders merely give effect to the selection made by the members.

Though in the answer itself Bishop stated it is by courtesy only that members are notified of names proposed, and admitted that many have been elected to membership without any such formality, in the affidavit he said that notices have been sent to all members at all times, except where it was a case of accident.

To aid the judge in his decision of the case, Bishop included in his affidavit a list of prominent men all over the country who had given the club their proxies for the annual meeting.

In Hammer's complaint to the Court he mentioned that many members have been elected to membership whose names have not been sent to the members, in violation of the constitution and by-laws, and attached to his papers as exhibits the various literature sent out by the club before election, with their letters asking for proxies. He complained that proxies were voted at the preceding year's meeting without any provision therefor in the by-laws, and that unless restrained by the Court the present directors will be enabled to hold control, to the great damage and injury of the members, and prayed that the Court restrain the club from conducting and managing the club in violation of the by-laws and constitution and restrain the voting of proxies. He also asked that the club be restrained from admitting members without due notice, as provided in the by-laws.

The temporary injunction asked for to restrain the voting of proxies at the election on November 1 was denied by the Court, but this and the other matters will come up for final determination later.

Incorporations

Aero Club of Utah, Salt Lake City.

Aero Club of Hartford, Hartford, Conn.

Aero Club of Colorado, Denver, Colo.

Malasomma Aeroplane Company, New York. Cap., $25,000; incorporators, A. Malasomma, L. Jantzen, G. H. Jantzen.

G. Hilton Gantert Company, Philadelphia, Pa. Cap., $50,000; incorporators, G. Hilton Gantert, Albert C. Trammel and E. S. Partridge. The company will handle aeroplanes and automobiles.

Barberton Aviation Company, Barberton, O. Cap., $10,000; incorporators, W. A. Mansfield, M. Paridon, E. B. Frace, J. M. Royan and H. W. Alcon.

Patents

We desire to print a correction to the list given in the December number. The name of the patentee and address should read: Charles W. Cheney, Brookline, Mass.

Henry Mesinger, New York, N. Y., No. 940,701, November 23, 1909. Airship, consisting of a boat-like framework with two longitudinal shafts, one of which is movable laterally with relation to the axis of the ship. Propellers are provided front and rear, and two sets of wings formed of slats capable of opening and closing are caused to oscillate by means of cranks operated by first-named shafts.

Albert H. Friedel, Baltimore, Md., No. 940,866, November 23, 1909. Flying machine, the distinguishing feature of which lies in two propellers provided at the rear of the chassis. These propellers are adjustable vertically and horizontally so as to drive and steer the machine, and in addition the blades are referred to as wings, so arranged that the angle and inclination are changeable; besides which they can be contracted and expanded by a radial movement at will.

Jacob Suter, Jersey City, N. J., No. 941,896, November 30, 1909. Aerial vessel. A framework rising rom the body supporting aeroplanes spaced one above the other; the upper one being inflatable while the lower has a control opening, below which swinging wings are made to operate, besides a propeller at the rear and up and down swinging rudders. The inflation of the upper plane is accomplished by means of a heating chamber therein connected to the exhaust from the motor.

Samuel W. Applegate, South Bend, Ind., No. 939,651, November 9, 1909. Aeroplane, the characteristic features of which are a body composed of a cigar-shaped shell, a propeller in the front and a universal-jointed tail or rudder at the rear. The supporting surface consists of a plane extending across the body and above it.

Boyd W. Dysart, Los Angeles, Cal., No. No. 939,483, November 9. 1909. Airship. Two elongated, horizontal cylinders having closed walls and open ends are caused to rotate in opposite directions. The outer surfaces of the cylinders are provided with spiral blades. Platforms are suspended inside the cylinders from the axes, and engines are supported on these platforms. A horizontal rudder is provided in the forward cylinder and a vertical rudder in the after cylinder.

Otto Krell, Charlottenberg, Germany, assignor to Siemens-Schuckart-Werke, G.M.B.H., Berlin, Germany, a corporation, No. 940,329, November 16, 1909. Optical instrument for determining the direction of travel of airships and the like by means of an eye-piece tube common to two telescopes, one of which points below and the other points on the horizon. A glass prism is provided in the field of vision with a plurality of lines which will coincide with the direction of the apparent motion of the point below when such motion coincides with the point on the horizon. A gyroscope is mounted on the vertical telescope to maintain steadiness.

M. I. T. Aero Club.—A working aero club which proposes to build and experiment with research work was formed Nov. 12 by 600 technology undergraduates with the backing of several members of the faculty. In 10 minutes more than $300 was subscribed toward purchasing materials and obtaining an aviation field.

President Maclaurin told of the club, was much pleased, and said the club would have the full use of the institute laboratories. The establishment of a regular course in aeronautics at the institute is Dr. Maclaurin's aim.

The forming of the aero club came at the end of a lecture in the Tech Union by Prof. A. Lawrence Rotch, chief of the Blue Hill Observatory, and close friend of the Wright brothers, who sketched the history of the conquest of the air.

The club plans to begin actual work at once. Each man must pledge himself at least three hours a week to work on research, construction or draughting. Gliders will be built within a few weeks, to be followed by the construction of an aeroplane, following the lines laid down by some member of the club. Several members have worked with gliders already.

Charles E. Creecy, '10, of Illchester, Md., was elected temporary chairman, and John S. Selfridge, '12, of San Francisco, a brother of Lieutenant Selfridge of the signal corps, who was killed at Fort Myer last year when a Wright machine fell, was made secretary-treasurer. The executive committee consists of M. A. Lyons, '10, of Somerville; H. D. Kemp, '12, of Dorchester, and C. H. Strang, '13, of Brooklyn.

Y. M. C. A. Model Contests.

On November 27, at the continuation of the aeroplane model contest for the Louis R. Adams cup given to the West Side Y. M. C. A., Dr. Dederer was the winner with 92 ft. 1 in.; Walter Phipps, second, 83 ft. 2 in., and James K. Dalkranian, third, 77 ft. 6½ in. There were fourteen machines entered.

There was quite a turnout at the aero flight on December 4 in Frank Goulds' Riding Academy. Fifteen machines were entered. Dr. Dederer had a flight of 112 ft. 11½ in. Percy Pierce was second, with 87 ft. 6½ in.; Wilson Marshall, Jr., third, with 69 ft. 6½ in. Several new models were shown, among them a Bleriot model built to scale and made by a Mr. Sage. It is a very pretty piece of work.

On account of the long flight made by Dr. Dederer at the last contest the Y. M. C. A. was compelled to procure larger quarters for the flights, and succeeded in getting the Twenty-second Regiment Armory, and on December 11 a contest was held in which there were entered some fifteen machines, and the winners were Dr. Dederer, with a flight of 147 ft. 6 in; second, Percy Pierce, 105 ft.; and third, C. C. Graves, from Newark, N. J., 97 ft. As this made the third time that Dr. Dederer won the cup, it now becomes his property. Immediately upon his winning the cup a representative of *Automobilia and Flight* informed the Y. M. C. A. that they would donate a solid silver cup, to be competed for by men.

In this contest two new rules are noticeable. One is, the machines must start from the ground, and the other, that they must be built in such a manner that a man-carrying machine could be built from the design of the model.

In conjunction with these model flights a series of flights will be held under the auspices of the Y. M. C. A. for boys. The contest will be for a silver cup given by Mr. Leo Stevens to the Junior Aero Club of America, and offered by them to the Y. M. C. A. as a trophy for boys.

NEW COURSE BEGINS IN JANUARY.

On account of the large demand which the former course in aeronautics at the West Side Y. M. C. A. has created, the Association has been compelled to get ready for another course, which will start the middle of January.

In the new course there will be two separate courses. One will be a class of ten lectures given by Mr. Wilbur R. Kimball in the Association Building, for which the fee will be $20 and membership. There will also be given a course consisting of ten lessons on a man-carrying machine, which has had a number of successful flights. These lessons will be given by Mr. Kimball, and will take in the handling and managing of a full-sized aeroplane.

CLUB NEWS

The **Harvard Aeronautical Society** has been organized with a charter membership of 240 to do its share for advancement, and particularly to make accessible information to Harvard men. A library will be established, a systematic course of lectures provided, an exhibition of flying models, construction of gliders and volunteer experimental work.

James V. Martin is director. Among his duties he is to instruct the members in model flying and gliding and endeavor to construct at least one full-sized machine and install a motor. There is much enthusiasm manifest. and there is good reason to expect that the above and other conditions of the constitution will be fulfilled. One illustrated lecture and a motion picture aeroplane exhibit have already been given.

Professor A. Lawrence Rotch, president of the society, will deliver a course of lectures on the physics of the air. Prof. I. N. Hollis, of Harvard Engineering School, will lecture on the movement of solids through fluids, and Prof. R. W. Wilson, professor of astronomy, will discuss the new problems of navigation arising with the advent of air craft.

Glenn H. Curtiss will be given a reception on December 23. A flight exhibit is being arranged for spring.

The **Cleveland Aero Club** has been formally organized at a meeting held in the quarters of the Cleveland Automobile Club in the Hollenden. Forty shares of stock were subscribed for and nine directors were elected. H. C. Gammeter, president of the temporary organization, presided, and C. J. Forbes, Jr., of the Automobile Club, acted as secretary. The directors elected were H. C. Gammeter, C. W. Fuller, L. H. Kittridge, J. Milton Dyer, William F. Bonnell, W. H. Abbott, Robert Jardine, Carl De Mooy and Albert H. Bates. The club is affiliated with the Auto Club.

The **Aeronautic Society of Florida** is the name of an aero club recently formed in Jacksonville, Fla. At the last meeting convened for the election of officers the following gentlemen were elected: President, Geo. W. Clark; first vice-president, Dr. Sanderson; second vice-president, B. I. Butts; third vice-president, H. J. Klutho; treasurer, Dr. Stenson; secretary, Dr. Davenport Kerrison: directors: Hon. H. H. Buckman, H. C. Hare, William Frazier, Hon. Frank Chase, J. H. Bland and W. W. Acheson, Jr. The membership numbers some fifty, with new applicants on the list.

Several of the members are working on aeroplanes of various descriptions, and one full-sized plane is awaiting a motor. Dr. Kerrison, the acting secretary and, indeed, promoter of the society, is experimenting with a new method of control from which he expects good results, but that like all new things has yet to be tried out.

The **Aero Club of Utah** has been incorporated now and every member is an active worker. One member, L. R. Culver, has a machine nearing completion. During the winter weekly meetings will be held, with lectures and talks on motors and machines, etc. The first will be by J. M. Thomas on patent law, followed by a lecture on the Wright machine by the secretary, Frank A. Ayres.

The **Aero Club of Rochester** has been tentatively formed by thirty-two enthusiasts of that city at a meeting held in the offices of the Elbridge Engine Company. Committees were formed, and at a subsequent meeting the constitution and by-laws will be adopted. A canvass was made of those present as to the activity in the construction line in Rochester. and it developed that either gliders or full-sized machines were being built by Messrs. Ocumpaugh, Strowger, Nichols, Hall, Oliver, Adams, French, Delong, Benjamin and Urmson, the latter having two machines practically completed. Four full-sized machines are actually under construction, and it is very probable that the aero club, which numbers among its members several millionaires, will soon begin the construction of further machines.

The **Aero Club of Hartford** has held its incorporators' meeting and elected the following officers: President, Hiram Percy Maxim; vice-president, C. H. Gillett; secretary, Arthur G. Hinckley; treasurer, Albert M. Kohn. With the above mentioned the following complete the board of governors: Charles B. Whittlesey, J. C. Rowe and Fred W. Dart. Membership is limited to one hundred. The club will be affiliated with the Aero Club of America. At present the total membership is but sixteen, with one honorary member, Charles J. Glidden.

The **Cornell Aero Club** has been organized with fifty-four members at Cornell University, Ithaca, N. Y., with the following officers: President, R. E. Treman; vice-president, G. F. Hewitt, Jr.; corresponding secretary, M. Bronk; treasurer, J. C. Von Glahn.

A glider has been given the club by R. V. Morse, of Ithaca. Professor McDermott gave the first lecture, taking up the history of aeronautics and showing the different classes of air "craft" and their sphere of usefulness. His suggestion that the club have committees on historical development, technical study, motors, literature, experiments, etc., was adopted. The next lecture will be by Prof. C. F. Hirshfeld, of Sibley College, on "Motors and Proper Propulsion of Airships."

Twenty-one cups were awarded at the first meeting of **The Aeronautic Society** at its new quarters in the Engineers' Building, 29 West Thirty-ninth street, New York, on December 9. These have been won during the present year at the two exhibitions and for private feats. Among the cups presented was one for the first member to make a flight in his own machine at the society's grounds, which went to the machine built by François Raiche and Charles M. Crout. In the second series of model contests which have been held during the fall, W. S. Romme got a cup as a first and a gold medal as a second. One was for uniqueness of design. His monoplane model resembles nothing more than an umbrella with a large hole in the centre. In reality it is a short section of a very wide angle cone, with a large hole in the centre. Two concentric hoops separated by sticks of bamboo, covered with silk, form the surface, while a hollow tube containing the rubber band power bisects the area of the circle, with the propeller at the end of the tube on the circumference of the circle. It flies very slowly, indeed, on perfectly even keel, at a fairly flat angle. J. K. Dalkranian, a many-prize winner at Y. M. C. A. contests, received the Hanau Cup and a medal for long flights with his beautiful Antoinette-like model.

Edward W. Smith, of Germantown, Pa., who has written most instructively on his work in AERONAUTICS, received a trophy for his models' flights at the two exhibitions.

The Stevens cup for the first passenger flight was presented to Dr. William Greene.

Other prizes were awarded to the kite men, and "Aeronaut Johnny Mack" obtained the Stevens Medal in the Montgolfier balloon ascents at Morris Park.

Professor William Hallock, Dean of Science and head of the Department of Physics at Columbia University, and Winthrop E. Scarritt, former president of the Automobile Club of America, gave interesting lectures to the 200 members assembled.

During the previous meetings of the month, Capt. C. H. Hamilton, from the Sandy Hook U. S. proving grounds, talked on the experiments made at Sandy Hook recently with regard to shooting at a captive balloon. Geo. C. Cole described his method of obtaining electric current from the sun's rays and the wireless transmission of power. Geo. A. Spratt was another speaker. Carlos De Zafra, a motor-boat engineer, gave an illustrated lecture on naval ordnance, describing among other offensive and defensive devices the launching of torpedoes from boats of speed, concluding with a discussion of the aeroplane and dirigible in warfare and moving pictures of the Rheims meet, etc.

The **Aeroplane and Kite Club** of Illinois has been organized with a goodly membership at 2852 North Clark street, Chicago. Edward E. Harbert is president; Oscar Newstrom, vice-president, and James Rucker, secretary.

The **Aero Club of Notre Dame**, organized by the students of Notre Dame (Ind.) University, has formed in a permanent way. The officers are as follows: L. M. Stoakes, president; John C. Tully, vice-president; John M. Wilson, secretary-treasurer.

The **University of Pennsylvania Aero Club**, at Philadelphia, Pa., with fifty members, is working actively. Membership is limited to students, though there is a system of membership for non-students.

The club is arranging to build a motor machine on lines already laid out. Construction is to be started in January. This will be on the Curtiss order, but is to include some features of the Farman. Hugh L. Willoughby, the first man to wear the red and white of "Penn" in an athletic event is an honorary member.

The officers are: President, F. H. Dechant, Senior C. E.; vice-president, E. F. Wright, Junior M. E.; secretary, G. A. Richardson, Soph. M. E.; treasurer, J. F. Rhodes; Carl H. Carlson, superintendent of construction and chairman of the executive committee.

The club hopes to induce the University to inaugurate a course in aeronautics.

The **Aero Club of Buffalo** has been formed at the Automobile Club of Buffalo, starting with a membership of about forty, many of whom are members of the Automobile Club of Buffalo. The headquarters will be at the Automobile Club until the organization has a large enough membership to build a clubhouse of its own.

A board of directors was elected, and they selected the following officers: President, John M. Satterfield; vice-presidents, H. A. Meldrum, Howard A. Forman, Robert K. Root; treasurer, George P. Urban, Jr.; secretary, Dai H. Lewis.

The **Aero Club of New England** voted at a special meeting of the directors that the entertainment committee arrange monthly dinners for club members and friends, to be followed by an entertainment during the months of January, February, March and April. The directors endorsed the exhibition of aerial craft contemplated by Mr. Chester I. Campbell. They approved a suggestion to reserve one week in October, 1910, to be known as Boston's International Aviation Week, and the president was requested to ascertain if there is sufficient interest in Boston to provide facilities and means to hold this contest in this vicinity. The directors accepted the cup offered by Cortland F. Bishop, to be presented to the pilot of a balloon making the longest flight in 1910 who starts from a point in New England. The contest is open to all international pilots.

Mr. H. H. Clayton and J. Walter Flagg were appointed a committee to arrange for the purchase of a rubber balloon of 80,000 cubic feet capacity, to be called the "New England," to enter the international contest to be held in this country October next. Mr. H. H. Clayton was chosen to pilot the balloon.

Mr. Albert A. Merrill was added to the committee on aeroplanes.

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AERO MEETS FOR DAYTON.

The **Aero Club of Dayton** held a banquet at the Philips House, November 19th, all members present. It was decided to have a meet there in the spring, and plans are now being made. The club has also asked to be affiliated with the Aero Club of America.

A trip was made in the Hoosier, Saturday, December 4th, leaving Dayton at 1.30 and landing at 4.15 near St. Paris, forty-five miles from Dayton, Dr. P. M. Crume, pilot, Judge Dustin, Mr. John Aull and Mr. S. T. Hunter as passengers. The trip was uneventful and an easy landing was effected.

The International Aeroplane Club are planning for a meet also, at which time they will try out the new Wright machine which has been ordered from the Wright Bros. At a meeting Dec. 1st, Mr. Luzerne Custer gave a very interesting talk on air pressure at different altitudes, introducing a new staticope of his own make, a description of which I am sending you. The new diminutive one-man balloon made by Dr. P. M. Crume was given the name of "The International" by the club. The first trip was made in it Nov. 27th.

DESCRIPTION OF AEROPLANES

(Continued from page 7)

Transverse Control.—The regions W W of the flexible main plane are warped inversely.

The tapering ends of the rudders F and V may be considered as fixed *keels*. The *seat*, S, is placed under the plane. The *mounting*, L, is on two wheels at the front and one in the rear, no springs being provided. Total weight, 350 to 450 lbs.; speed, approximately 44 m.p.h.; pounds per h.p., 17; pounds per sq. ft., 1.5; aspect ratio, 3.2 to 1.

Ref: Sci. American, v. 101, p. 292; Aerophile, v. 17, p. 439, 508; Zeit. für Luftschiff., v. 13, p. 802, 957; Aero, v. 1 p. 405; Motor Car Jour., v. 2, p. 794; La Vie Auto, v. 9, p. 711; Zeit. Ver. Deut. Ing., v. 53, p. 1762.

(To be Continued)

TALKS WITH INVENTORS

(Continued from page 10)

tions: Inventions of which the working would be against the law of good morals. Food stuff and other articles of consumption. Pharmaceutical products or substances obtained by a chemical method, the processes employed remaining patentable.

Condition of novelty: An invention is not considered new at the date of the application if it is already described in printed publications, or has been notoriously worked either in the Grand Duchy or in the States of the German Union, to such an extent that the working of it by other persons who are experts would be possible.

Workings: Three years from the date of the patent. Subsequently every year.

Annual fees.

I will continue these particulars in next month's issue of AERONAUTICS taking up Normandy, Portugal, Russia, Sweden, Switzerland, Turkey and Finland.

C. A. M. RULES

(Continued from page 25)

of France, the Automobile Club of France, the Syndical Chamber of Aeronautical Industries and the National Aerial League—will refuse their sanction to every aviation meeting the promoters of which may seek to obtain pecuniary advantage for themselves. Too many aviation meetings being regarded as undesirable, the C. A. M. will patronize only those of which the organizers may have demonstrated their personal disinterestedness and agreed to deposit in a bank, to be indicated by the C. A. M., all the net profits, if any, of the projected meeting. That money would be employed in other prizes for aerial performances, to be determined by the promoters, or, failing them, at the end of 12 months by the C. A. M. Moreover, before the organization of an aviation meeting is commenced the promoters are for the future required to obtain the written approval of the C. A. M., which will only be granted to those who accept the conditions mentioned above and also the requirements of the International Aeronautical Federation. A sub-commission appointed by the C. A. M. will exercise financial control over the organization of each meeting. Every contract entered into between the promoters and aviators, apart from the ordinary program and conditions of the aerial competitions, must be submitted to the C. A. M. for its approval, failing which both the promoters and the interested aviators will be disqualified. The C. A. M. also reserves for itself the right to require that the total amount of money offered as prizes be lodged in a bank selected by it before it grants

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its license for the proposed meeting. Every aviator who may participate in an unauthorized aviation meeting or exhibition will be disqualified. To participate in the aviation meetings authorized and controlled by the C. A. M., every aviator must be the possessor of a license, to be issued gratuitously to the applicants who may be regarded as sufficiently expert to pilot an aeroplane without danger to the public. The licenses already issued by the Aero Club of France are to be recognized as valid, but all the aviators' licenses must be renewed yearly. The C. A. M. also reserves for itself the right to withdraw any license it may have granted without being obliged to give the reason for that measure.

EXCHANGE

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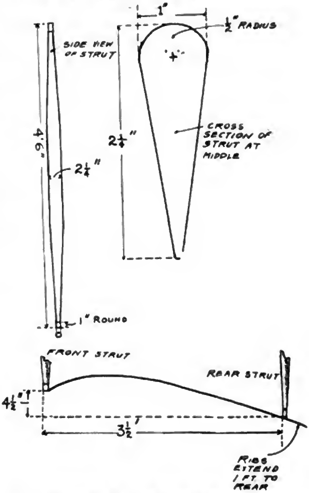
SIZE OF CURTISS STRUT.

Inquirer asks for size and form of the struts used by Curtiss. Herewith is diagram giving these details. The ends are rounded to fit the sockets.



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The value of soaring blades is due altogether to the elasticity of the air. When air is compressed in a closed space it is found to be very elastic, and will quickly regain its original volume upon the removal of the compressing force.

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Dear Sir:—I have discovered the perfect automatic balance for aeroplanes. I also believe my machine superior to any other in ease of leaving and returning to the ground. Extremely simple in construction and operation. Protected by pending patents. The commercial machine of the future must embody several features of my machine.

I would like financial aid to enable me to demonstrate the soundness and practicability of my principles, or I would sell part interest in the patents. I would welcome detailed correspondence with anyone really interested in the matter.

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In its free state air may be compressed by a quick movement of a body, such as the inclined surface of an aeroplane. If this inclined surface is immediately followed by the horizontal surface of a soaring blade a considerable lift is exerted upon the blade by the expansion of the compressed air. This lifting result is secured without any increase of draft, except the very slight amount due to skin friction, for the blade being in a horizontal position offers no resistance to the forward movement of the aeroplane. On the other hand, the lift due to the expansion of the air against the soaring blade makes it possible to sustain a given weight with the aeroplane proper set at a smaller angle of incidence, which, of course, results in decreased draft.

If the rear edge of the blade curves upward, the forward push of the expanding air will also add to the propelling power in some degree. The use of a properly adjusted soaring blade will then decrease the amount of external propelling power required to sustain a given weight in two different ways. First, by decreasing the resistance to be overcome, and, second, by contributing to the amount of propelling power which is yet required to sustain the load in a horizontal line of flight.

The amount of motor power thus saved may be expended in increasing the speed of the aeroplane, which increase of speed will permit the angle of incidence to be still further reduced while still maintaining a horizontal line of flight, thus again decreasing the amount of necessary external propelling power. Hence, the speed which a given motive power might attain under these circumstances would be largely limited by skin friction and the head resistances of vertical edges.

T. S. Harris.

Waverly, Ill.

WILL SOMEONE ANSWER?

Is it practical to consider using a compressed air engine as a propelling power for a model dirigible? It seems to me I have read of aeroplanes and dirigibles being installed with compressed air engines for short trial flights. I have in mind a gas envelope of, say 25 feet in length by 5 feet in diameter. Would not a compressed air engine of, say half a horsepower, possess an advantage over an electric motor in both weight and cheapness? I have put the idea of a gasoline motor out of mind, as I understand that for such a small balloon it would require a large outlay to build or procure a motor of sufficient lightness. My idea was to make the engine as simple as possible as that was not the part of the airship I wished to experiment with. I intended procuring a tank and affixing the ordinary steam engine cylinder and piston to it. The tank could be filled before each flight at a power pump. I should like to inquire if such engines have not been used before for just such purposes, and, if so, where I could obtain something to meet my needs.

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With launching stations not more than twenty-five miles apart it will not be a great undertaking to fly from one to another.

In the present state of the art a flying-machine cannot be considered marketable unless it can fly at least twenty-five miles with a reasonable degree of certainty.

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Fig. 1.

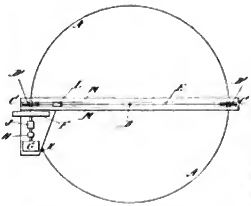
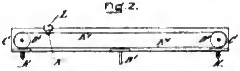


Fig. 2.



The principal elements of the launcher are indicated in diagrams. Fig. 1 is a plan. Fig. 2, a vertical section. AA is a circular rail. Diameter of circle for launching at low speeds, 50 feet; for speed of 60 or more miles per hour, 75 feet. CC is a light frame of steel trussed. In order to face the wind this frame turns on a pivot at BB′. KKK are wheels bearing upon rail A. D′D′ are grooved pulleys carrying an endless cable, EE′. G is a small motor, preferably a single cylinder gasolene engine. H is a clutch. J, a suitable speed-changing device. F, a fly-wheel. L is a cross-head which slides on guide-bars, MM. The cross-head L forms a part of the flying-machine which is to be launched.

The flying-machine is provided with a cable-grip N similar to those used on cable railways. The grip is preferably kept normally open by a spring, and is closed by a pedal pressed by the aviator. In launching a flying machine the maximum of power required is exerted for only a few seconds, therefore the cumulative effect of a small motor upon a comparatively heavy fly-wheel is sufficient.

The operation of launching is as follows:

The flying-machine is placed in a position indicated by L. The speed-changing device is set at lowest speed. The motor is started and the clutch thrown in. Gradually, as the fly-wheel gains in momentum, the higher speeds of the changing device are successively utilized until the maximum momentum of the fly-wheel is reached.

The aviator then gradually closes the grip controlling the speed of his machine by the pressure of his foot, taking, if he so chooses, the full speed of the cable as the cross-head leaves the guide-bars.

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AERONAUTICS

THE AMERICAN MAGAZINE
OF AERIAL LOCOMOTION

VOL. 6
NO. 2

FEBRUARY, 1910

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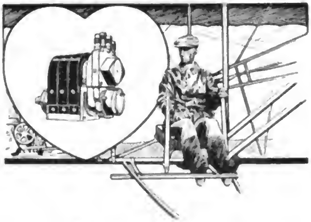

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WILL the aero clubs of this country follow the plan of the British Aerial League and attempt to get favorable action from Congress on the needs of our military defense? No,—they won't. AERONAUTICS has repeatedly urged "getting after" the representatives at Washington. It was no use. Only a waste of good space that might have been of aid to some experimenter. Those to whom the Almighty, in his infinite wisdom, has entrusted the future of aeronautics in this country, were too busy making rules for this or that holding admiration meetings, presenting medals and otherwise attending to the many details demanded by their zeal.

The Secretary of the Aerial League of the British Empire is sending out the following letter to each candidate for Parliament at the forthcoming general election:—

> "I am requested by the executive committee of the Aerial League of the British Empire—which is a patriotic and non-party organization—to enquire, for the purposes of publication, should you be elected as a member of the forthcoming Parliament, if you are prepared to support a vote for supplies for furnishing our country with adequate means of aerial defence, in view of the actual position already secured by neighboring continental nations in this important matter. It is definitely known that Germany will have 'in being' an aerial fleet of nineteen vessels by the end of the year, and that this will be increased in the near future to twenty-five; it is further reported that by the next manœuvres Germany will possess sixty-five airships. France, Austria, Russia, Italy and the United States* are all moving in the matter of the provision of aircraft with energy and foresight."

The letter is accompanied by a form on which the parliamentary candidate can express his attitude towards the matter.

* Perhaps so, but foresight is useless without the wherewithal.

Boston's "First National Exhibition of Aerial Craft."

The first national exhibition of aerial craft will be held in Mechanics Building, Boston, Mass., from February 16 to 23, 1910, under the management of Chester I. Campbell.

The airship used by Capt. Baldwin in his attempt to fly from New York to Albany has been secured and will be on exhibition, as well as Mr. Glidden's spherical, the "Boston." It is also planned to have a Wright, Bleriot, Latham, Greene, Shneider, and every other possible type of heavier-than-air apparatus.

A. Leo Stevens will have on hand his large collection of balloons and baskets. The Wittemann Bros. will show their gliders and accessory manufacturers are expected to exhibit in force.

An enormous number of models and photographs of all kinds of machines has been sent in already and it is expected that the exhibition will be the largest and finest of its kind ever held in this country.

The Aero Club of New England has lent its name and aid. Every one who has a model or full sized machine should communicate at once with Mr. Campbell, at 5 Park Square, Boston, Mass.

A NEW PRINCIPLE IN THE CONSTRUCTION OF STATOSCOPES

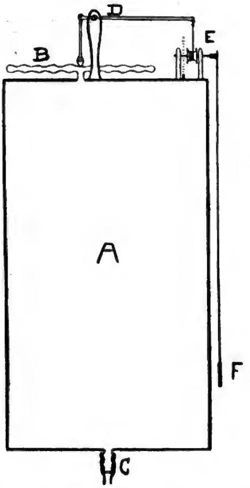
By L. Luzern Custer

(PRESENTED BEFORE THE INTERNATIONAL AEROPLANE CLUB, DAYTON, O., OCT. 27, 1909.)

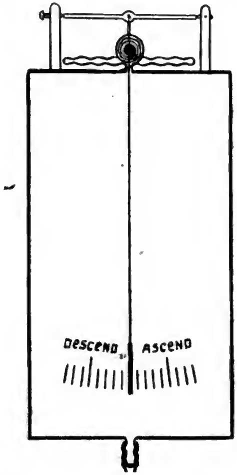
TO KNOW whether one is ascending or descending; to know how fast one is ascending or descending; to know definitely the altitude. These are matters of paramount importance in the management of every kind of air craft.

To determine the state of vertical motion of a balloon—whether rising or falling—an instrument termed a statoscope is employed, and to tell its altitude an aneroid barometer is used. The statoscope is to show whether you are in the act of rising or falling, and has no reference to degree of altitude. It is with this instrument that this paper shall deal.

FIG.-1.



FRONT VIEW-FIG 1



Historically, the first statoscope of which we have record was a mercury column used by Pascal in endeavoring to prove Torricelli's theory of the existence of a vacuum. He found that by ascending Mount Puy de Dome the mercury in the mercury tube fell 3 in. From that time to this the fundamental principle upon which nearly all statoscopes have been constructed has remained the same.

It is known that the pressure of the air existing at various altitudes above the surface of the earth varies.

For the benefit of those who are not as well versed concerning the physics of the atmosphere as are others, the following explanation is given. In the first place, as is well known, the earth is surrounded by a layer of air. This air, or the atmosphere, in accordance with laws of physics concerning gases, varies in its density. This is due to the weight of the superimposed air over any area at any level. As the level of this point is raised, the superimposed air becomes less and the pressure consequently diminishes; if it is lowered, the pressure increases—thus we find there is a definite air pressure for a definite altitude.

The statoscope (Fig. 1) as universally used at present consists of a closed reservoir (A) connected to an extremely sensitive metal diaphragm (B), which is exposed on the outside to changes of atmospheric pressure. An open tube (C) also enters this reservoir, thus normally maintaining a pressure within equal to that without. Closing this tube and holding the statoscope quiet, the pressure within and without still remain equal, and so no motion of the metal diaphragm takes place. But suppose we elevate the statoscope with the tube closed, then what will result? The confined air now being of greater pressure than the surrounding air, the diaphragm is pushed out. Now, if, instead of elevating the instrument, we lower it, a reverse operation will consequently ensue; the pressure on the outside now being greater, the diaphragm is compressed. These movements, although exceedingly slight, are recorded by means of suitable levers (D), clockwork (E) and a long, delicate index needle (F). When in either case the needle reaches the limit of the scale, it can be again reset by releasing the pressure on the tube, thus permitting an equalization of pressure within and without.

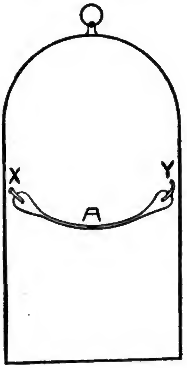
From my observation of the operation of a statoscope of this style, I perceive three notable defects. First, a jerky motion when the index needle is on the verge of noting an ascent or descent, and this is unfortunately at a critical time. Second, the small range of motion of the recording needle to a comparatively great ascent or descent, and, third, the inconvenience of pressing the rubber tube every time a reading is taken.

It was to overcome these apparent defects that I set about to construct a statoscope by which I hoped to overcome these patent faults.

The statoscope (Fig. 2) I have to introduce is based on the difference of atmospheric pressure existing between any two different levels, thus far similar to those already constructed. From this on it is radically different, as you will observe. Instead of using a delicate metal diaphragm and a complicated clockwork device, I employ a large capillary tube (A), with an internal bore of about 3/32 of an inch, containing a globule of oil—coal oil or other liquid of light specific gravity and viscosity. This tube is connected to the reservoir at the point X and finds exit to the outside air at y. Any difference of pressure between the inclosed air and the external air will be quickly detected by a movement of the globule one way or the other. It can be readily seen that there is no lost motion in the action of the globule at the critical time. The very instant there is the least change of pressure, the globule moves, and no unsteady motion occurs as in other statoscopes. This use of a globule of oil instead of a clockwork mechanism has the added advantage of being almost frictionless.

In this design there is no tube connecting the interior of the reservoir to the external air, and it must therefore create a constant motion of the globule in one direction or the other. As it is a mechanical impossibility to have a tube long enough to register such a motion as would be produced in ascending or descending, say, a mile, this must be provided for by some other expedient. This has been accomplished in the following manner. Each end of the tube is drawn out in a long narrow taper, thus forming a means by which the globule may be broken when it reaches this point of the tube. The oil then flows back until by capillary attraction it bridges over and a new seal is formed. This motion is consequently continuous—the globule always moving in one direction in ascending and the opposite in descending. The rate at which the globule moves will also be an index of the relative rate of vertical motion of the air craft.

FIG-2



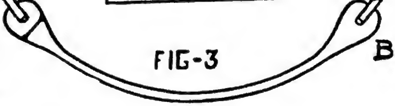


FIG-3

As will be observed by reference to Fig. 3, the tube containing the globule of oil has a very slight curve. This is done to counteract the action of gravity as far as possible, thus allowing the globule to be considerably more sensitive than if the tube were in a vertical position, as is the tube in a barometer.

The trap (B) in the same figure is merely a mechanical contrivance to permit of holding the statoscope in any position without the loss of oil and yet allow air to pass through.

Now, regarding the range of motion: By actual comparison between a standard statoscope and one of this form, I find that with air chambers of the same cubical contents, the ratio of movement to a given height of 50 feet is 1 in. in the ordinary statoscope to 8 in. in this form. In other words, with the same cubical contents, this is approximately eight times as sensitive. As the range of motion of the globule varies directly as the cubical contents of the air chamber, it is seen that the range of motion or delicacy of the instrument is infinite. The larger the air chamber, the greater the motion of the globule.

This constitutes in the main the statoscope I have constructed.

Some of the advantages which I claim for this appliance are, first, its simplicity and consequent cheapness of manufacture; second, the delicacy of its operation; third, the absence of moving parts and frail mechanism, and, lastly, the elimination of the inconvenient rubber tube necessary in other statoscopes.

As to its application, I feel that a statoscope of this kind could not only be used in balloons and lighter-than-air vessels, but would be applicable to aeroplane work as well.

It is with the hope that this instrument may be of some value in aerial navigation that I respectfully submit this to you.

NOTE ON THE INTERFERENCE OF AEROPLANE SURFACES DUE TO GROUPING

By M. B. Sellers

A FRAME offering small wind resistance was so constructed that the surfaces tested could be moved about in it, while remaining always parallel with the top bar of the frame.

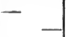
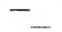
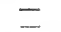
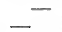
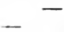
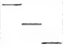
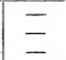
This was attached to the "lift balance" in the "wind tunnel" described in *Sci. Amer. Supp.* of Nov. 14, 1908, and the whole frame was inclined at the desired angle.

The planes tested were 4 in. x 12 in. curved to 1 in 12. The vertical spacings were 2 in. and 4 in. In A, (see diagram) the planes are 4 in. apart horizontally, in B they are edge over edge as shown by the dashes which represent their relative positions.

In making a determination, a single plane was mounted in the frame and its lift determined = say 100 g. Then two were mounted as shown at A, 4 in. apart horizontally and 2 in. vertically and the lift was, say 180 g., which would equal 90 g. for each; or 90 per cent. of what one would lift alone and so for the other values which represent the percentage of lift of a plane in combination compared with one alone. It is seen that there is considerable loss in lift, being greater at 10 deg. than at 5 deg.; and that the least interference is shown where the upper plane is in front of the lower one; and that the interference diminishes with the horizontal and vertical distance apart. A possible source of error was the unavoidable fluctuations in the velocity of the air current, but it is hoped that the numerous observations taken on each value have at least in part eliminated this.

The interference due to the walls of the wind tunnel might have affected the values unequally, but a critical study of the values gives no positive evidence of this.

It is probable that a change in curvature of the "planes" would change the amount of interference. The air velocity was 1,400 per minute. I see no reason why a change of air velocity would change the interference if the angle of attack remained the same.

Angle	**Vertical Distance**							
5°	2"	90	87	80	80	84	85	70
	4"	94	90	87	88	89	89	83
10°	2"	89	85	73	72	73	82	65
	4"	91	90	85	84	85	85	77

INTERFERENCE OF AEROPLANE SURFACES. PERCENTAGE OF LIFT

P. W. Wilcox of Columbia University is quietly working on his own design biplane, to be ready for trials on Hempstead Plains in April or May. It will be of the Farman genus, with nothing about it particularly new.

COMPARISON OF THE SUCCESSFUL TYPES OF AEROPLANES

By G. C. Loening

IN a previous article (see AERONAUTICS, January, 1910, p. 2), the six most successful types of biplanes and the six most successful types of monoplanes were described, and details of their construction and operation were given, supplemented by plans and elevations of each drawn to the same scale.

In the present article the various types are compared according to the following essential features:

I. Mounting.
II. Rudders and Keels.
III. Transverse control.
IV. Aspect ratio.
V. Incident angle.
VI. Propellers.

There is also given a set of four tables which show graphically certain features of construction and operation of each machine.

The numbers before the name of each machine in these tables are the same as were used to designate them in the previous article, a convenient order which was adopted there. The biplanes are grouped in Nos. 1 to 6, and the monoplanes in Nos. 7 to 12 inclusive.

I.—Mounting.

There are three distinct types of mounting:

(a) Skids alone—Wright.

(b) Wheels alone—Curtiss, Voisin (both types), Bleriot (both types), Pelterie and Grade.

(c) Skids and wheels combined—Farman, Antoinette, Santos Dumont and Cody.

In the Farman machine the combination is most pronounced, and consists of two long skids forming part of the framework, upon each of which is mounted a pair of wheels. When starting, this machine runs along the ground on its wheels, but when alighting the wheels, which are attached to rubber springs, give way, and the machine lands on its skids.

The necessity of providing springs on a heavy machine mounted on wheels has frequently been emphasized, (1). M. Bleriot has called special attention to the fact that a high speed screw generates a gyroscopic force which tends to resist all vibration or sudden changes of its axis, (2). If, therefore, when running over the ground the machine be suddenly jarred, the propeller is likely to snap off. This has often been experienced by M. Bleriot himself, and was only obviated by the use of a very springy mounting.

The relative merits and demerits of mounting on wheels or skids are subjects of wide discussion, (3). The advantages of mounting such as in the Wright machine became very great when starting is to be made from soft soil or rough land, since the rail upon which the machine is placed can be laid down in almost any kind of country. Here is an advantage of skids over wheels, the latter requiring a certain area of reasonably smooth and hard ground, a condition not always met with. A machine fitted with skids can withstand rougher landings, and upon alighting stop within a few feet. Furthermore, by using a rail, and, in addition, as is often done with Wright machines, a starting impulse given by a falling weight, a less powerful motor is needed for starting, (4). But a machine fitted with skids alone, when once landed away from its starting rail, cannot again take to flight. It is noticeable that several Wright machines have been fitted with wheels, with success, and combinations of wheels and skids seem to be the most satisfactory.

II.—Rudders and Keels.

The direction rudder in all cases is placed at the rear. The Cody biplane has an additional direction rudder in front. All the monoplanes have their elevation rudders at the rear, while in all biplanes, excepting the Voisin (new model), this rudder is placed out in front. Rudders placed at the rear are advantageous in that they act at the same time as keels, (5). But, in general the placing of the elevation rudder in front appears to offer more exact control of the longitudinal equilibrium, (6).

In the Wright biplane the elevation rudder is so constructed thtat when elevated it is automatically warped concavely on the under side, and when depressed curved in the opposite way. This materially adds to the rudder's force due to the peculiar law of aerodynamics whereby a curved surface, under the same conditions as a flat surface, has a greater ratio of lift to drift, (7). The reduction in size of the rudder that is thus afforded, and its flat shape, when normal, greatly reduce the head resistance.

Keels, idle surfaces for preserving stability are entirely absent in the Wright, Santos Dumont, and Cody. In the Voisin type use is made of several vertical keels, partitions, placed not only at the rear, but also between the main surfaces themselves.

Keels add greatly to the resistance of a machine, the skin friction of such surfaces being considerable, (8). But actual practice shows that they do increase stability, (9), and tend to hold the machine to its course.

III.—Transverse Control.

In practice the lateral stability of aeroplanes is preserved in three ways.

A. Automatically.
B. By warping of the main planes.
C. By balancing planes ("wing tips.")

NOTE—Figures in parentheses relate to references at conclusion of article.

The Voisin is the only type for which automatic lateral stability is claimed. The rear box cell and the vertical keels between the surfaces, exert such a forcible "hold" on the air that to displace the machine is difficult and in all ordinary turmoils of the air it displays exceptional stability. A well known aviator amusingly stated at Rheims that were a Voisin tipped completely over on one end, it would still be aerondynamically supported, so great is the expanse of vertical surface.

Without such keels, however, the lateral balance of any aeroplane is so precarious that some form of control is necessary, (10). The machines using the methods of warping the main planes for the preservation of lateral balance, include in addition to the Wright, all the present successful monoplane types.

Because of the structural difficulty of rigidly bracing the surface of a monoplane, warping is an ideal form of control. But the rigid structure of the biplane permits auxiliary planes (wing tips) to be more easily provided. This is done in the Farman, Cody and Curtiss biplanes.

These two methods of transverse control are both very efficacious, but the additional resistance, unaccompanied by any increase of lift, which is produced by balancing planes, perhaps renders them less desirable than warping, (11). On the other hand there are objections to weakening the structure of the main surface by making it movable, (12).

There is a further distinction between these two methods of control which although not thoroughly understood appears to be borne out in practice: viz., when a plane is warped, the action tends not only to tip the machine up on one side, but also due to the helical form assumed, there is a tendency to turn, which can only be counteracted by a vertical rudder; in the case of "wing tips," however, due to the equal but contrary position in which they are placed, both sides of the machine are equally retarded, and in addition, since the main surfaces preserve the same shape and the same angle of incidence, this tendency to turn appears to be absent. Mr. Curtiss states that for correction of tipping alone he makes no use whatever of the vertical rudder, (13).

IV.—Aspect Radio.

It is at once observable from the diagram (see p. 4, 5, AERONAUTICS, Jan., 1910) that the aspect ratio (ratio of spread to depth) is generally less in monoplanes than in biplanes. Theoretically and experimentally the value of this quantity is considered to have much to do with the ratio of lift to drift, (14); but whether or not in actual practice, those machines like the Santos Dumont having as low an aspect ratio as 3 to 1 are really inferior in their qualities of dynamic support to a machine like the Cody with as high an aspect ratio as 7 to 1, is difficult to determine, since many other quantities such as the loading and the velocity are involved. It is interesting to note here that some of the large soaring birds, notably the Albatross, may be considered as aeroplanes of very high aspect ratio.

V.—Incident Angle.

The incident angle (i. e., the angle the main inclined surface makes with the horizontal line of flight) varies greatly in the different types. The Wright biplane is noticeable for its low angle of incidence in flight which rarely exceeds 2 degrees. Renard, after deductions from the experiments of Borda, as well as Langley and other investigators have enunciated the principle, that as the incident angle diminishes, the driving power expended in sustaining a given plane in the air, also diminishes, (15). Wilbur Wright states that "the angle of incidence is fixed by the area, weight and speed, alone. It varies directly as the weight, and inversely as the area and speed, although not in exact ratio," (16). Faraud concludes that small angles are the most efficient for all aeroplanes, (17). A constant angle of incidence in flight seems also to be desirable, (18).

The Farman, Voisin, Bleriot XI and Grade have an angle of incidence when first starting much greater than when in flight. Since this involves greater drift resistance and consequently more power necessary to attain the velocity of levitation, and furthermore, in view of the fact that aeroplanes with as heavy a loading but no excessive angle are able to rise after a reasonably short run, it would appear as if this provision were unnecessary.

Recent experiments in aerodynamics indicate that the ratio of lift to drift, with a surface of the shape now so generally used, varies little between the values of 1 degree and 6 degrees, a maximum value being reached in the neighborhood of 3 degrees, (19). This explains in a measure the wide variations in this angle as observed and recorded for the different types, and also that many of the present machines preserve their equilibrium during comparatively large changes of their longitudinal inclination.

VI.—Propellers.

The Wright and the Cody are the only machines provided with two propellers rotating in opposite directions. The greater efficiency of a propeller of large diameter and slow revolution over one of small diameter and high rotative speed, (20) has attracted much attention. This seems to be borne out especially in the case of the Wright machine in which more thrust is obtained per unit of power than in any other type. The limit of rotative speed in practice is in the neighborhood of 1,500 r.p.m., and in all types excepting the Wright, Cody and Bleriot XII, the r.p.m. exceeds 1,000. Many of the aeroplanes use Chauviere wooden screws for which an efficiency of 80 per cent. is claimed. The Antoinette, Voisin and Grade use metal propellers.

NOTE—**Figures in parentheses relate to references at conclusion of article.**

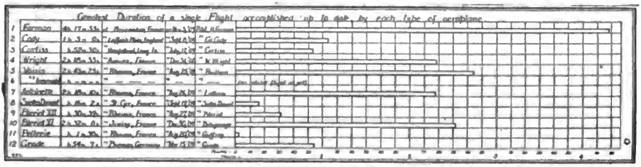


TABLE I.

Table I.

In this table, the longest flight of each type up to date is given both numerically and graphically. As can be seen, the Farman holds the world's record, while the Pelterie and New Voisin have as yet accomplished little. From a purely aerodynamic standpoint an aeroplane should not be judged by duration of flight, because this depends much more on the skill of the operator, the endurance of the motor and the amount of fuel carried. The three best flights have been made with Gnome motors.

Table II.

The speed of each machine is here given. The Santos Dumont is the fastest and the Voisin the slowest. The speed of the Bleriot XII is normally as given, but Delagrange in his record flight (see Table I) used a 50 h. p. Gnome motor, and obtained 49 m.p.h. The speeds of the machines are very much alike, the monoplanes not being in general any faster than the biplanes.

Table III.

The number of pounds per h. p. a machine carries gives an excellent indication of its efficiency. As can be seen from the Table, the Wright machine is by far the best and is followed by the Bleriot XII. But in the latter case, calculations were made for a 35 h. p. motor with which this machine was originally fitted, while at present a 60 h. p. motor is used. The Santos Dumont appears to be the least efficient in the application of its power. Again here, there is no general distinction between the monoplanes and biplanes.

Table IV.

In this table the loading (i. e., the pounds per sq. ft. of surface), is given for each type. The Grade and the Wright have the lightest loading, while the Bleriot XII has the heaviest. It is particularly noticeable that in general, the monoplanes are more heavily loaded than the biplanes, the Grade being an exception. This, however, is not accompanied by any specially remarkable high speed qualities of the monoplanes, as would be expected.

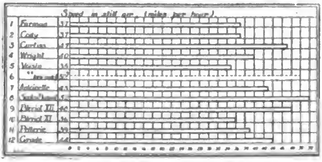
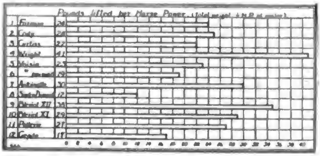


TABLE II.



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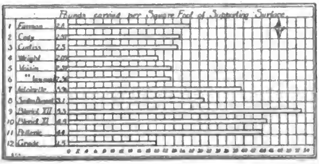


TABLE IV.

(1) ref: Chatley, H., Sci. Am. Sup. v. 67, 346.

(2) ref: Bleriot, L., "La Resistance des Helices," Aerophile v. 16, p. 118.

(3) ref: Rozendaal, J., "Rader oder Anlaufschiene," Zelt. fur Luft. v. 13, p. 136; Hunn, Zelt. fur Luft. v. 13, p. 619; Lefort, H., Aerophile v. 17, p. 51; Tatin, V., Aerophile v. 14, p. 220.

(4) ref: for descr. of this apparatus see Aeronautics, Sept., 1908.

(5) ref: Tatin, V., Aerophile v. 14, p. 220; Seux, E., Paris, Acad. Sci. v. 142, p. 79.

(6) ref: Lefort, H., Aerophile, v. 17, p. 51; Aeronautics, v. 4, p. 175.

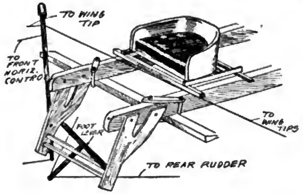
(7) ref: (early) Dr. Barnard of Columbia in Sci. Am. v. 32, p. 112; Lilienthal, O., Aeronautical Annual No. 3, p. 95; Soreau, R., Soc. des Ing. Civ. v. 2, p. 507 (1902); Lanchester, F. W.,

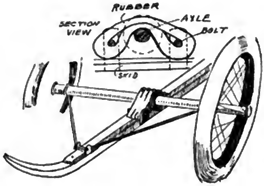
(*Continued on page 73.*)

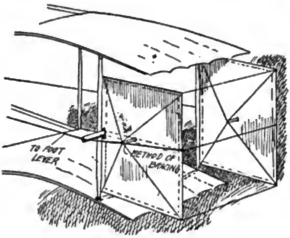
THE FARMAN AEROPLANE

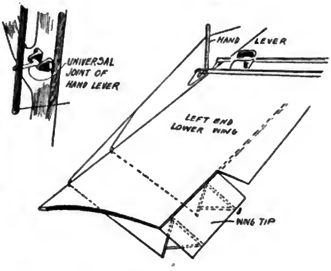
THROUGH Paulhan's flights at Los Angeles, everyone will be interested in knowing the details of his Farman machine. Farman has been famous as one of the pioneer European fliers since 1907, when he used the Voisin machine. This year he branched out for himself and is manufacturing the Farman aeroplane. This has no vertical surfaces in the main supporting cell, as has the Voisin, nor in the tail cell.

Supporting Surfaces.—As usual, there are two lateral main beams to each plane, spaced apart as shown in the sketch. On these are laid the ribs, flush with the front edge of the front beam. Only a single layer of canvas is used, but the beams and ribs are inclosed in pockets of the same material. These rib pockets are sewn on the upper side of the cloth. The rear edge of the lower surface is cut away from the rear beam back to give room for the propeller. Between the two outermost struts of each main surface the rear edge is hinged to the rear lateral beam, making "flaps" like the tail board of a wagon. The ash struts are oval in cross section. The whole main cell is stayed with wire.









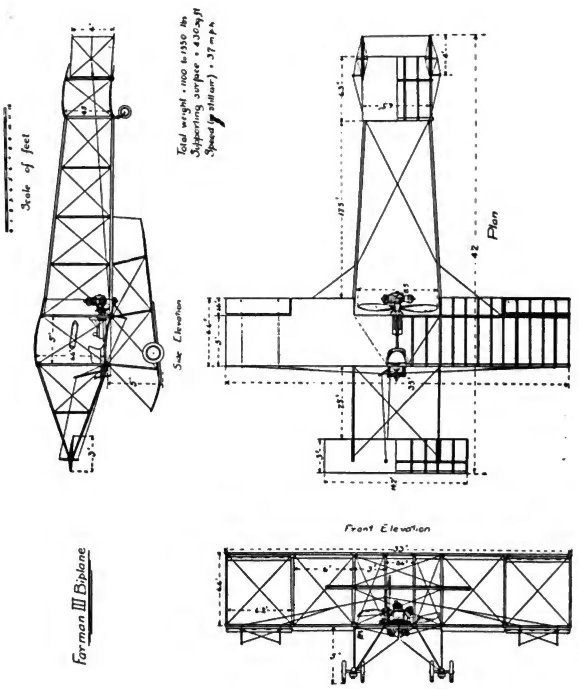
Supplementary Surfaces.—There is a single surface front horizontal control. A double surface rigid tail carries at the rear thereof two vertical rudders, working in unison, hinged to the two rear struts of the tail. The bracing of these is shown in the sketch.

Framing.—Ash is the principal wood used in the construction of the machine. The four spars running back to the tail have a rectangular cross section and are braced by vertical struts set in aluminum fittings. To lugs in these fittings are attached the diagonal guy wires. There are no horizontal members to this structure, except the two at the front edge of the tail.

The rigging supporting the front control is composed of four spars, each pair of which is braced with but one upright strut, and guy wires. The only horizontal spar is that at the front edge of the horizontal rudder, on which the rudder hinges.

To avoid drilling the wood, the engine bed is fastened by U bolts, as shown. The seat and foot lever arrangement is attached to the same spars which form the engine bed. A pressed steel bracket provides a support for the stationary crankshaft of the rotary Gnome engine.

Chassis.—Each of two skids connect with the main cell by three vertical struts, braced with wire. An axle is strapped to each pair of skids by heavy rubber bands. Two brace rods run from each skid to the inner extremities of its respective axle. Each of these rods


Scale of feet
Total weight = 1100 to 1350 lbs
Supporting surface = 430 sq ft
Speed (in still air) = 37 m.p.h
Side Elevation
Plan
Front Elevation
42
17.5'
33'
25'
5'
4'
3'

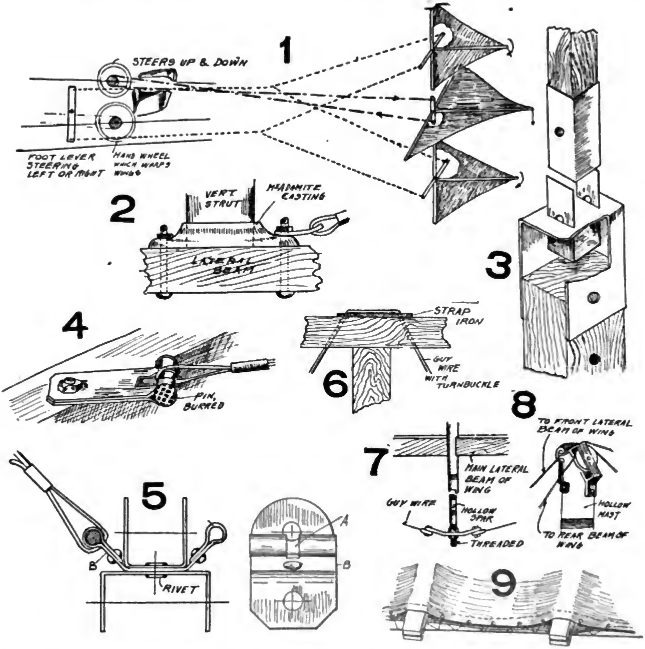
Farman III Biplane

is hinged so that the wheels are somewhat flexible. In landing, the wheels first touch the ground, the elastic stretches and the skids come into contact.

Controls.—The "wing tips" will now naturally come in for discussion. The two flaps at either extremity of the machine work in unison through a vertical wire running from the rear of the lower to the rear of the upper. Moving a hand lever to the right, for instance, pulls the left hand flaps down. This movement does not affect the flaps on the other side at all, they being left perfectly free to adjust themselves to the stream lines. Pulling the left-hand flaps down increases their angle of incidence, increases the resistance, that end of the machine slows up, with an increased lift. To counteract the right end of the machine from increasing its forward velocity and the whole machine slewing around to the left, the two vertical rudders are turned to the right by pressing with the right foot on the foot lever. At the aviator's right hand is a lever mounted on a universal joint, as shown, to which four wires are attached. Two of these work the flaps, as described, and the other two operate the front control. Pulling the lever toward the operator steers the machine up, and vice versa.

Power Plant.—The engine at present used is an air-cooled Gnome seven-cylinder rotary, 50 horsepower. The wood propeller, a Chauviere, is placed ahead of the motor.

CONSTRUCTION AIDS, IX.



In Fig. 1 is shown the method of steering up and down, left and right, in the Antoinette machine which Mr. Winton will bring to this country in the Spring. Figs. 7 and 8 show details of construction of the wings. The ribs are laid on two main transverse beams, neither of which form the edge of the plane, both front and rear edges being sharp. These two main cross members fit into the body framework. There are other transverse beams but which do not join to the body. The wings are supported by wires which radiate from a central mast above the body and run to the two main cross beams. Each cross beam is trussed by a vertical post and diagonal wires, as shown in Fig. 7. The method of warping was illustrated in the last issue.

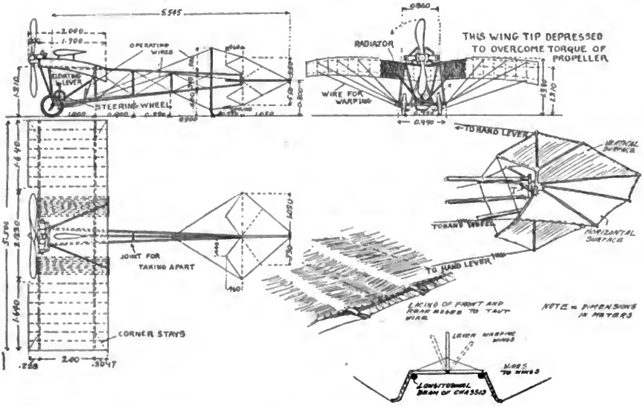
Some vertical strut fastenings are shown in Figs. 2, 5 and 6. No. 5 is the device used in the Wright machines. The guy wire slips in the slot "A" in the part "B" and a pin is run through. Nos. 2 and 6 were noticed on machines building at Morris Park.

Another Wright device is that shown in Fig. 3. This is a section of one of the two uprights that extend from the extreme front end of the skids up to and supporting the front rudder. Wire for the rear edge of a surface is being used at Morris Park, as shown in Fig. 9.

FLOUR AND WATER USED ON PLANES.

Paulhan was recently discovered painting his surfaces with a mixture of flour and water. He had noticed that they were not as tight as they should have been after much use out in the weather and this scheme was adopted in lieu of anything better.

SANTOS DUMONT'S "DEMOISELLE II"



Supporting Surface.—Dimensions in sketch. The bamboo ribs are fastened to the under side of the two lateral ash beams. The ash beams taper toward each end and are largest several feet out from the apex of the dihedral angle, measuring here about 1 by 2 inches. The cloth used is silk, in a double layer. A light bamboo corner-stay holds the fabric tight and prevents distortion at the ends of the planes. The angle of incident is greatest at the apex of the dihedral angle at which the planes are set. The curve is almost a true arc of a circle, and the rise of arc is about 1-20. Wires are stretched across the ends of the ribs, to which the silk is laced. The two layers of silk are sewn together between the ribs. The whole plane structure is kept rigid by guy wires introduced between the layers of cloth. In the middle, the cloth is cut away back to the front lateral beam to provide room for the propeller.

Supplementary Surfaces.—A combination vertical and horizontal tail is pivoted on a universal joint. The tail moves as a whole, that is, the horizontal part is not movable distinct from the vertical. In this universal joint, of tubing, the horizontal member "T" has a vertical arm that swivels in the brazed sockets which hold the bamboo beams together. The tail moves up and down upon this horizontal piece "T."

Controls.—A lever at the right hand side moves the tail up and down. At the left is a small hand-wheel which turns the tail to the left or right. Another lever at the aviator's back, which warps the wings, fits into a tube fastened to the operator's coat. A side movement of the aviator pulls down the rear edge of the wing opposite the side to which he leans, Springs are introduced in the wires which control the tail so as to bring the tail back without effort on the part of the operator. The spark switch is on the steering lever, while the gas is controlled by a foot pedal.

Chassis.—Three large bamboo beams about 2 inches diameter form a long horizontal sharp-pointed cone. Connecting these are oval steel rods. The knots in the bamboo are smoothed down. Between the knots the bamboo is wound. The drawings show fully the chassis arrangement. The seat is a piece of canvas stretched across the two lower bamboos, just behind the wheels. At the lower end of the vertical mast forward of the tail is a skid which holds up the rear end.

Power Plant.—Darracq, 2 cyl., opposed, horizontal, 30 h.p., water cooled, weight complete 52 kg. The 4 valves are in the head. Auxiliary exhaust ports. Cylinders of steel, with soldered copper jackets, 130 mm. bore by 120 mm. stroke. Connections are at 180 degrees with the crank shaft. On one end of the crank shaft is the propeller, 2.1 m. diameter by 2.1 m. pitch. On the other end is a pinion and eccentric working the oil pumps. This pinion also meshes with a gear which operates the water pump, the cams which raise the valves and at the same time operates the magneto. The engine is mounted on top of the main surface. The radiator is placed under the main surface and extend the full length of the plane. This is composed of a great many small copper tubes connecting up to a larger tube at front and rear.

Total weight about 120 kg.

IN THE WORLD OF AVIATION

Hamilton Reported Made New World Record—Flies in Snowstorm

ST. JOSEPH, Mo., Dec. 18.—At the series of exhibition flights given by Charles K. Hamilton with the Curtiss aeroplane at St. Joseph, Mo., under the auspices of the Merchants' Association, a new world's record was made for one kilometer, as well as a new world's "average speed" record.

Strong northwest winds with a temperature near zero marred the flights, except on Sunday, Dec. 12, when an unofficial flight of six minutes' duration amid a blinding snowstorm, a total distance of five kilometers being covered, the rounding of corners not considered.

Two straight flights of one-half and a kilometer were made previously, in which the aviator took bearings, having never before seen the field.

All the flights of the meet took place over the frozen surface of Lake Contrary. Trials, however, were made within the race course, the entire length being 1,250 ft., covered with ice and snow and a year's growth of weeds.

FLIES IN 29-MILE WIND.

On Tuesday several short flights were made at about 20 ft. high. One complete round of the course was made with only a few touches. A strong wind of 29 miles per hour prevailed, government record. Going with the wind, protected somewhat by the timber along the west shore, a speed of 62.72 miles an hour was made. The distance was exactly 3,450 ft. and the time a fraction over 37½ seconds. J. H. Hess held the watch and your correspondent measured the distance. This record was made under the unfavorable conditions. A faulty spark plug gave trouble, the lubricating oil was cold and a new carburetor also gave trouble, to say naught of the velocity of the wind.

Wednesday trials within the race course resulted in the aviator losing control by vibration set up while passing over the undulating field. His foot slipped off the brake lever and the aeroplane crashed into a fence, breaking two braces of the horizontal rudder support truss.

After repairs were made, a two-bladed propeller was substituted, but it was too late for further flights.

On Thursday, Dec. 16, after hours of waiting for the abatement of the northwestern gale, chilling to the very marrow, flights were again made from the lake's surface. Thousands watched, in protected covers from the storm, from the Casino and two clubhouses, Hamilton's maneuvers with the tiny biplane, which were sensational. In alighting from the first round of the course, in which only about half the time was the machine flying, by setting the brake too sudden, the machine skidded around, facing the wind. The tires were loosened and later were thrown while passing through a snowdrift. Notwithstanding this, he arose and covered 800 ft. A rear wheel was locked at the time. After adjusting the tire, the last flight was made. In alighting, the machine coasted dangerously near a barb-wire fence and Hamilton threw himself prone upon the ice in a desperate struggle to impede the speed. His nose was cut and bruised, and blood flowed freely, when boys on skates rescued him.

The best flight of the series was on the last day, Sunday, Dec. 19. Hamilton covered about 10 miles, or three times around the course over the lake, at about 40 ft. altitude.

O. J. PRUITT.

[This speed has been questioned. We have no further authority than the above at present.—*Editor*.]

Hamilton's Flights at Kansas City.

22-MINUTE FLIGHT ACROSS COUNTRY.

From St. Joseph, Mo., Hamilton took his machine to Overland Park at Kansas City, where W. B. Strang, owner of the park, had contracted for three flights a day for eight days.

On December 26th the first flight was made. In spite of extreme cold and bad wind, several straight jumps were made and one circular flight of a mile. The next day he accomplished a couple of figure-eights and several straightaway flights of about 300 yards. The next day, Tuesday, a local constable thought Hamilton would collide with the grandstand and attempted to save the grandstand from the new fangled assault. He was struck by the machine, that is, literally, and considerably bruised. A patrolman went to the hero's aid and was dragged for 20 ft. The weather on this day was so cold that the water in the radiator froze on attempting the third flight. Wednesday was too cold for flights at all. The following day four flights were made, including two figure-eights and a 100-ft. altitude flight.

Friday, December 31, witnessed a very sensational flight. For more than a mile an altitude of about 500 ft. was maintained and he was in the air for 22 minutes, covering an estimated distance of 18 miles, at an average height of 200 ft.

SPECTACULAR FLYING AT 500 FT.

The weather on this occasion was by far the best of the week. It was fairly warm and the wind was very light. Hamilton made a straightaway flight of a mile but could not make the circle. He then returned through the air to the grandstand and started again. He made about the same distance on his third and fourth flights. His fifth attempt took him 2½ miles through the air and he was prevented from making the turn by the telegraph and electric wires. He made a successful return flight to the grandstand during which time he raced with a speeding electric car and provided some interesting entertainment for the passengers who were going to Overland Park in a doubtful frame of mind as to the ability of the machine to fly. It was his seventh attempt on this day that resulted in the greatest flight of the week.

Starting as he did on every other occasion, the machine rose gracefully into the air and made about four miles due north before Hamilton began his circle. The crowd in the stand and on the field saw the big machine gradually grow smaller and when Hamilton made the circle to the west it resembled a giant chicken hawk.

FLIES CROSS COUNTRY.

Across houses, haystacks, trees and electric wires the machine sped on toward Marriam. He again turned south with the biplane and for a minute the machine was lost to view. It was believed that Hamilton had alighted but the eager crowd saw it reappear and cheered as the machine headed straight for the field. When the flying machine and its daring driver came closer to the park, the four cylinders of the engine could be heard beating in unison and the machine was flying about 40 miles an hour. Hamilton made no attempt to alight, but drove the biplane east until it appeared that he soon would be lost to view. Another wide circle to the south followed. It was here that the machine attained its greatest altitude. Hemmed in on all sides by trees Hamilton had but one remaining course, that was to rise above them. He took the machine higher and higher and when at an estimated altitude of 500 ft. he drove over a mile of forest.

The machine went south for considerable distance and then Hamilton executed another circle and drove it southwest toward Overland Park. He alighted without accident in front of the grandstand and was accorded an ovation by the spectators. It was a spectacular flight and one that never will be forgotten by those who were fortunate enough to witness the exhibition. This was the last successful flight.

New Year's day, when there was an excellent prospect of assembling a crowd of 5,000 spectators, a cylinder in the engine broke and the people on their way to the aviation park were turned back at the state line. It was an unsatisfactory ending, as New Year's day was about the first one where the weather conditions would have induced a large turnout.

K. C. WILL HAVE AVIATION MEET.

Though the experiment proved a losing venture for Mr. Strang, it probably will be a good thing for Kansas City, as he has determined to bring an aviation meet here next May or June and already has opened negotiations with Hamilton to return and hopes to have Paulhan and other foreign and American aviators. Suitable trophies and cash prizes will be offered to make it worth while for the "human birds" to come to Kansas City. If three or more aviators come here prizes will be awarded for speed, heighth and distance. An effort also will be made to get the international balloon races.

Boston Man Buys Canadian Aeroplane.

The Canadian Aerodrome Co. is now building a monoplane somewhat similar to Latham's for Gardiner Greene Hubbard of Boston. It will be remembered that the Canadian Aerodrome Co. was formed by Messrs. F. W. Baldwin and J. A. D. McCurdy when the Aerial Experiment Association came to an end on March 31, last year. The company has built two machines, called the "Baddeck No. 1" and "Baddeck No. II," on the model of the previous machines of the A. E. A., with improvements, of course.

A short time ago Mr. McCurdy was in the air for over 20 minutes in the "Baddeck No. II," using a commercial automobile engine not built especially for aviation work, at their grounds in the Baddeck River Valley, about four miles from the town of Baddeck, Nova Scotia, where they have the use of a flat meadow.

Dr. Alexander Graham Bell, whose home is at Beinn Bhreagh, near Baddeck, together with the Canadian Aerodrome Co., will, as soon as the Bras d'Or Lake freezes up, have quite an aviation meet of their own. There are no less than five machines to be tried out. One, the old "Cygnet II," a "'drome" of pure tetrahedral construction: 2, a "'drome" upon the Oionos model, in which the framework is of tetrahedral construction and horizontal surfaces as well as oblique are employed; 3 and 4, the two "aerodromes" of the Canadian Aerodrome Co., the "Baddeck I and II."

John Shepard, Jr., of Boston, Mass., is considering the purchase of a Wright aeroplane. John W. Kaufman of Columbus, O., is another.

Aero Meet Opens at Los Angeles.

The first big aeronautic meet in this country opened at Los Angeles on Jan. 10. Paulhan is the main feature of the show, by reason of his great exploits abroad, though Curtiss and Willard stand high in the hearts of their countrymen.

After a great deal of fuss has been made over the question whether or not the permission of the Aero Club of America would be obtained in order that it would be possible for Curtiss to come, and to make the records of the meet official as far as the International Federation is concerned, the A. C. A. granted a sanction to the promoters of the meet through the Aero Club of California. This sanction was not given, however, without a string. The conditions imposed are substantially as follows: That no exhibition flights of dirigibles or aeroplanes be sanctioned; that contests of aeroplanes for prizes be sanctioned provided they are in accordance with the rules of the I. A. F., and that the Aero Club of America shall finally confirm the decisions of the judges and the prizes shall not be paid over before the period required by the rules of the federation, after the official acceptance by the A. C. A. of the awards.

Pilots of the A. C. A. cannot compete in races where unlicensed pilots take part.

The A. C. A. must be satisfied that the money for the payment of the prizes is available.

Cortlandt F. Bishop, president of the Aero Club of America, journeyed to Los Angeles to see that that big affair was handled in accordance with his views of propriety, but it is to be noted that his presence did not stop exhibition flights and ascensions, nor the discrimination between licensed and unlicensed pilots. Anyway, rules are at times only loopholes.

Anticipation of the meet aroused great enthusiasm in southern California and Los Angeles newspapers devoted the greater part of their editorial pages to appeals to the merchants for subscriptions to stock in the enterprise which was inaugurated out of civic pride and the desire to advertise Los Angeles.

Clifford B. Harmon will take delivery of his Curtiss aeroplane and learn its operation at Los Angeles.

PAULHAN SERVED IN WRIGHT SUIT.

Louis Paulhan, his wife, his wife's dog and mechanics arrived in New York on their way to Los Angeles on Jan. 3. Paulhan was immediately served with papers in an action brought by the Wright company alleging infringement. This does not prevent him from flying, but may deprive him of a more or less large portion of his earnings.

In the next issue we will have a very complete record of the meet through our delegate to the meet, Cleve T. Shaffer.

Says He Warped Wings in 1897.

D. D. Wells has completed a monoplane at his home in Jacksonville, Fla., and is now waiting for the engine and propeller.

Mr. Wells states that he made models incorporating the warping of the main plane in 1897, six years before the Wright patent. He says: "I considered it of not much value to patent it as it was. I also had in that model at that time rear pivoted horizontal and vertical controls."

The details of his present machine are as follows:

Supporting Surface.—The spread measures 40 ft. from "tip to tip," the two "wings" being each 4 ft. 2 in. front to rear at the center of the machine, tapering to a point at the extremities as in the Antoinette machines. The total supporting surface is about 150 sq. ft. The cloth used is "heather silk." Each wing is double covered. This cloth has been found very good without treatment.

Supplementary Surfaces.—There is a rear horizontal control 12 ft. spread by 3 ft. 2 in. front to rear. Pivoted at the center of the rear horizontal control is a vertical rudder measuring 4 ft. high by 4½ ft. front to rear.

The tips of the main surfaces are movable for lateral stability.

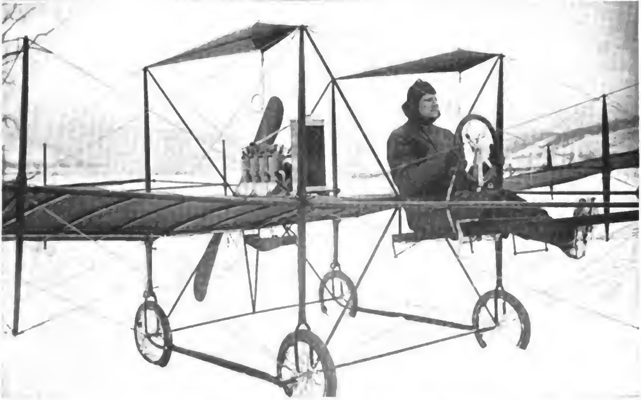
These wing tips are controlled independently of each other or in unison as desired. For instance, the left tip can be moved up or down without disturbing the right tip, and vice versa, each having a separate lever. Moving both levers to the right will lower front edge of right tip and elevate front edge of left tip. A reverse action is obtained by a reverse movement of the lever. These tips pivot near the center of the main planes front to rear and are operated by means of flexible wire cable running over pulleys, between the two layers of cloth, to a short vertical mast at the junction of the wing tip with the main surface. The same levers moved forward will elevate the front edge of the rear horizontal control, causing the machine to descend. Pulling both levers toward the operator will depress the front of the rear control, causing a rise. A cross bar just under the body in front of the aviator, pivoted in the center and used as a foot lever, is connected by wires with the vertical rudder for right and left steering. Pushing out on the left foot turns the machine to the right, the movement being the same as with the handle bar of a bicycle.

Body Framing, Etc.—The body, of rectangular cross-section, is covered with the same cloth as the surfaces. The front portion of this body is mounted in a large vertical triangle like a letter "A." Just in front of this "A" will be situated the motor, while the aviator sits just back of it. From the extreme front point of the body a curved skid extends down to the base of the "A," though later a patented skid will be employed. Another curved skid holds up the rear end of the aeroplane. The body and wings are both fastened and stayed to this "A." The length of the aeroplane over all is 24 feet.

White spruce is used for all framing. Bolt holes have been avoided almost entirely. The framing measures 1 in. by ¾ in. The body is 22 in. wide at the aviator's seat and 11 in. deep, and pointed at each end to avoid bolt holes. Clasps and sockets are provided for cross timbers. These sockets are made of No. 18 stamping steel. The weight of the apparatus without the motor and operator or propeller is about 100 pounds.

Monoplane at Curtiss Factory.

Hammondsport, N. Y., Jan. 11.—The first pictures of the new monoplane built at the Curtiss factory are just now available. The ma-



A. L. Pfitzner in His First Aeroplane *H. M. Benner Photo*

chine is on the design of A. L. Pfitzner, the motor superintendent of the Curtiss works, who was formerly an engineer with the Buick automobile concern. It flew on its first trial for several hundred yards, but through the inexperience of Mr. Pfitzner, the operator, it hit a tree.

Some entirely new features in monoplane construction are embodied in this machine. The motor is the new type Curtiss 25-horsepower, the same as used by Curtiss in the flights at Los Angeles. Instead of having the vertical rudder in the rear, it is placed in the front, while the rudder for steering up and down is at the extreme rear. The apparatus runs on four wheels instead of three, as used by Curtiss. In the photograph is shown Mr. Pfitzner, the designer.

Flies From Worcester to New York and Back (?).

WAS IT A PAIR OF OWLS AND A LANTERN?

A sensation was caused last month when Wallace E. Tillinghast of Worcester, Mass., stated that on the night of Sept. 8 he flew an aeroplane to New York and back, during which flight the motors were stalled for 46 minutes at an elevation of 4,000 ft.

The story has been generally discredited, but it seems to be a fact that Tillinghast is working on some kind of flying machine at a lonely spot 50 miles from Worcester and 13 miles from the nearest railroad.

After the announcement everyone in the vicinity of Worcester imagined he saw the searchlight of the aeroplane while it was making nightly flights. One practical joker tied a lantern to two owls and let them loose. This made another flight for Tillinghast.

> You started the new year right, for your January number was the best yet, I hope your magazine will continue to improve each month as it has in the past. If there is anything I can do to help AERONAUTICS and its readers—don't be bashful.
>
> CARL BATES.
>
> 104 West Oak St., Chicago, Ill.

WITH THE LIGHTER THAN AIR

Dirigible Ascents in the United States

During the year probably more than 450 dirigible ascents have been made in the United States by a dozen or more airships, using 7,347,000 cubic feet of hydrogen gas. There have been made possibly a few more of which no record is obtainable. Following is a partial list:

G. L. Bumbaugh—Seven at State Fair, Indianapolis, and 3 at Richmond, Ind. At Richmond the trips were of 3 to 4 miles each over the city, starting from a vacant lot and returning to the start.

Horace B. Wild—Three at Aberdeen, S. D.; 5 in Chicago; 7 at Terre Haute; 5 at Houghton, Mich. Number of inflations, 6, consuming 84,800 cubic feet of hydrogen. The "Eagle" and "Comet" were used.

Capt. T. S. Baldwin—Seven at Arlington, N. J.; 5 at Norwich, Conn.; 6 at Worcester, Mass.; 2 at New York; 4 each at St. Louis and Chicago, in the "1909 California Arrow," using 111,000 cubic feet of hydrogen.

Chas. J. Strobel—Six airships were operated by Mr. Strobel during 1909. The exact number of ascents made is impossible to ascertain. It is of interest to note that Frank W. Goodale alone made 152 ascents during the season, and it is probable that the other six pilots, Fred Owens, Stanley Vaughn, Eugene Godard, Jack "Dallas," "Van" Parker and Harry Ginter, made a goodly number apiece.

It is estimated by Mr. Strobel that the six ships were in service a total of 133 weeks, and used an average of 9,000 cubic feet of hydrogen each week apiece, or 7,182,000 cubic feet during the year. The capacity of each ship averages about 7,500 feet. One has a Curtiss 2-cycle engine; two have 4-cycle engines of Strobel's own pattern, and five are fitted with 2-cycle Indians. The extra two ships are kept in reserve in case of accident. Three Yale motors will be tried in 1910. During 1909 one airship was in Rio Janeiro, South America; one at Seattle; one through Canada and British Columbia; two in the East, and one in the Middle West. Two of these are now working in the South. Three go to Australia and New Zealand.

Figures have not yet been obtainable from Roy Knabenshue, Lincoln Beachey, Carl E. Myers and one or two others.

The Goodale ship has a capacity of 7,000 cubic feet, weighs 275 pounds without operator, equipped with 5½ horse-power Indian motor. The two Knabenshue-Beachey ships are 47 ft. long, 14½ ft. diam., with 5 horsepower motors.

The "Pommery," formerly known as the "Conqueror," owned by Messrs. Taylor and Arnold, of St. Louis, has been sold to the Aviation Committee of Los Angeles.

To Build Monster Hot-Air Balloon

J. A. Blondin, now of Los Angeles, is to build a "thermo-aerostat" with a capacity of 220,000 cu. ft. The weight, including the hot-air plant, with two passengers, fuel and provisions, will be about 2,200 pounds, while the lifting capacity is estimated at 3,000 pounds. To inflate the balloon, it is intended to use common coal oil, which can be procured in almost any locality.

After the balloon is filled with hot air and ready to start, the "furnace," which is located between the basket and the bag with the hot-air pipe projecting into the interior, will continue to supply fresh hot air and at the same time furnish power for a 25-horsepower engine which is used to drive a small propeller attached to a framework on the basket. This propeller is not intended to make the balloon a regular airship but it is hoped that it will enable the aeronaut to lay some kind of a course and possibly return to the starting point.

The advantages claimed are that an ascent of a week may be made, minimum initial cost and expense of maintenance, a saving of 90 per cent of the cost of inflation, a constant lifting power, and, by employing the motor, advantage can be taken of any stratum of currents.

Honeywell to Take Up Governor.

"Bud" Dozier has set April 1 as the date for the balloon ascension in which Governor Hadley, Mayor Kreismann and Dozier are to be piloted by H. E. Honeywell.

May Climb Mt. McKinley by Balloon.

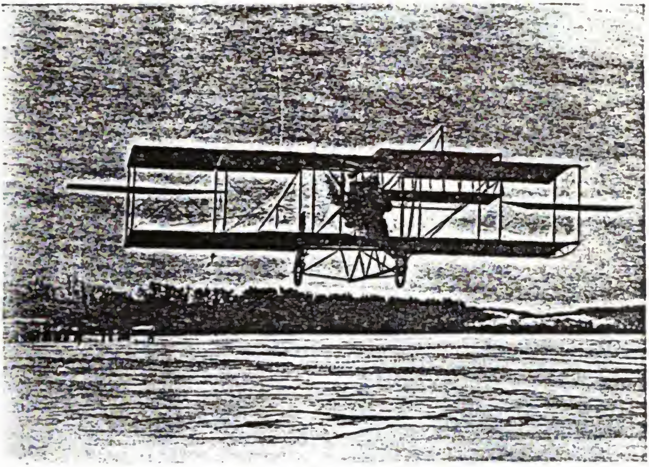
Some time ago Col. A. P. Shirley of Nashville, Tenn., declared if he had a balloon he would scale Mt. McKinley. For a Christmas present, A. Leo Stevens, the New York balloon builder, sent him a small hydrogen balloon, and it is now up to Colonel Shirley. The balloon has a diameter of 20 ft. and a capacity of 4,850 cu. ft., just enough to barely lift a man the weight of Colonel Shirley. The idea is to attach the balloon to a belt around the body of the climber. This is to prevent serious accident in case he should fall off a ledge, and avoids the necessity of the user lifting his own weight up the mountain side. No basket, of course, is used.

The big balloon built by A. Leo Stevens, the "All America," has also been sold to the Los Angeles Aviation Committee, and has already been shipped to Los Angeles.

Winton Buys Aeroplane

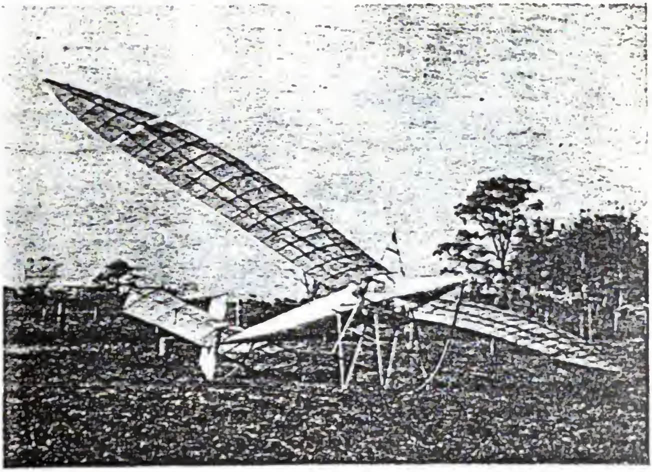
Alexander Winton, president of the Winton Motor Carriage Co., has purchased a 50-horsepower Antoinette aeroplane to be delivered some time in the spring.

Mr. Winton has recently been elected president of the Cleveland Aero Club.

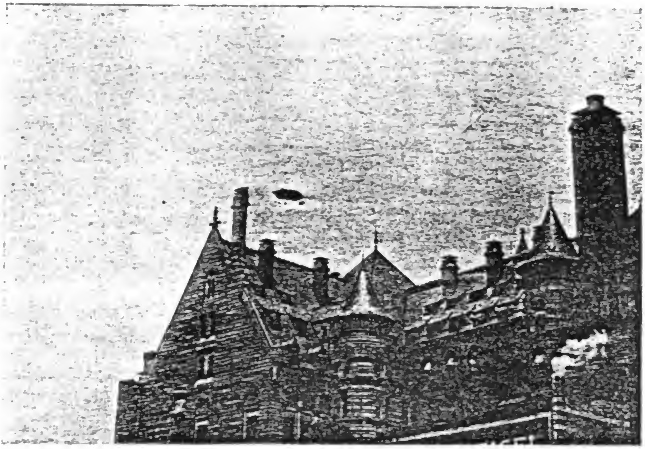


Hamilton Flying at St. Joseph

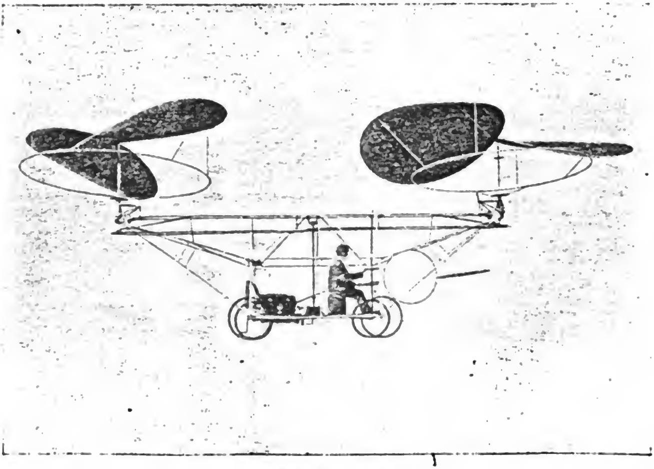
Photo by St. Joseph [Mo.] News-Press Staff Photographer



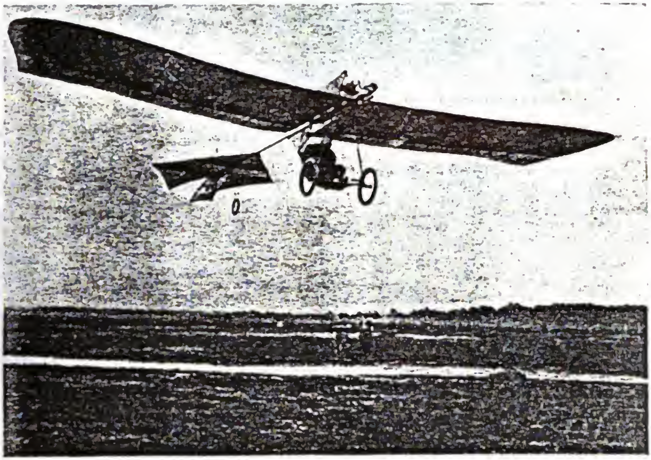
D. D. Wells' Monoplane



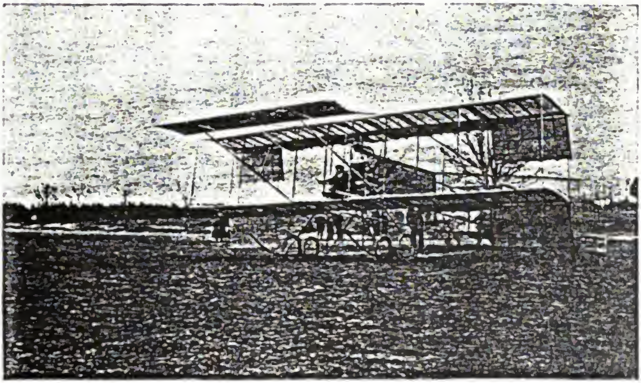
Goodale Over Prudential Bldg., Newark, N. J.



English's Helicopter



The Grade Monoplane *Levick Photo*



H. Farman Biplane—The Area of the Wing Tips has been Reduced Since the Above was Taken

CLUB NEWS

THE **Aero Club of America** has leased from the Garden City Co., a large real estate concern, an acre of ground near Garden City, L. I., at the edge of the Hempstead Plains, with the privilege of flying over all the other property controlled by the Garden City Co.

Willis L. Moore, chief of the United States Weather Bureau, lectured before 40 of the members of the Aero Club of America and Automobile Club of America at the latter's rooms on Dec. 27. With lantern slides he described the work of the bureau and hinted vaguely at a recent magazine article which devoted considerable space to the alleged incompetency of the bureau, by telling the percentage of error in calculations. Then he took a fall out of the "rainmakers," who use exploding balloons and cannon to produce (?) a fall of the precious fluid. He described one particular chart prepared each morning at 10 o'clock, which shows the distribution of pressure of the entire world. From the cable reports at this hour daily a line can be drawn showing the world-wide movement of storms. Before the eyes of the experts, six to eight of these can be "seen" wending their way through the atmosphere of the various portions of the globe.

The **Aero Club of Rochester**, was incorporated at Albany during the last week in December. The club organization was perfected earlier in the year, but with the idea of making its constitution and by-laws as strong as possible and to leave the least possible ground for future quibbling some weeks of deliberation by the board of directors were devoted to them before final adoption.

This, one of the last of the 1909 clubs, promises for the future to be one of the strongest organizations of the kind in the country. The history of its inception may prove amusing.

Nearly a year ago officials of the Elbridge Engine Company of Rochester, began to be "pestered" by "aviators" on the lookout for light-weight motors. The company was manufacturing very light-weight marine engines and their advertising of "more power for weight than any others" evidently interested prospective aviators. The inquiries interested the gas engine men and they began some experiments, both with engines and aeroplanes.

A nucleus of a dozen or so men interested in the new science brought the idea of an organization. This was taken up by the Rochester newspapers and on the evening the first meeting was held at the offices of the Elbridge Engine Company instead of the twenty men who were expected, there appeared more than thirty.

On this basis it was figured that a club membership of fifty would be ample and plans were made accordingly; this number was passed before the next meeting so the limit was raised to sixty. Before the second meeting, and organization, the voluntary applications had reached the one hundred mark, and still coming in. The membership includes some of the most prominent men in Western New York, doctors, lawyers, financiers, inventors.

Of these, a count being taken, it was found that nearly twenty had machines in course of construction or were financially interested in aeroplanes, built or building.

Quarters will be secured and preparations begun for active work to be done when the weather breaks.

The **Cleveland Aero Club** has completed its organization and elected permanent officers. Alexander Winton, president of the Winton Motor Carriage Co., is president; H. C. Gammeter of the American Multigraph Co., first vice-president; L. H. Kittredge, president of the Peerless Automobile Co., second vice-president; W. H. Abbott, third vice-president. Albert H. Bates is treasurer and C. J. Forbes secretary.

The manner of incorporation is unique, though it was instituted by the Aeronautic Society. Every man who joins receives a share of stock, giving him full voting power. This costs $25, which represents the first year's dues. The second and succeeding years an annual fee of $20 is paid by the members for privileges of the club. The capital stock is $10,000. There are now 40 members. Headquarters are in the Hollenden Hotel.

Lectures will be given to arouse interest and grounds provided for experimenting. Several of the members have already offered to subscribe large sums toward preparing grounds. Mr. Winton is particularly interested in this, as he wants a place to fly his Antoinette.

The **Michigan Aero Club** has been formally launched at Detroit. A committee consisting of R. D. Chapin, H. B. Joy, well-known automobile manufacturers; Russell A. Alger, Fred. Wadsworth, E. W. Lewis and Charles Ducharme, was appointed to formulate definite plans and report. Wilbur and Orville Wright and F. S. Lahm were present at the meeting. Mr. Lahm illustrated his talk on ballooning with lantern slides.

The **Southern Aero Club** has been formed in New Orleans, with Dr. Thomas W. Carey, Jr., president: F. Freige Galan, vice-president; Dr. L. L. Lavadan, secretary-treasurer. Temporary headquarters at 809 Canal St., New Orleans. Already 30 members have joined. The objects of this new organization are to encourage study, hold exhibitions and contests, have workshops, sheds, motors and grounds for members, and to spread knowledge of the art.

The **Aero Club of Pennsylvania** has been formed by a group of enthusiasts in Philadelphia to attend more particularly to aviation. These include Henry S. Gratz, president of the Aero Club of Philadelphia, Arthur T. Atherholt, who was aide to Major Hersey in the 1907 Gordon-Bennett; T. T. Tuttle, Louis J. Bergdoll, who has just bought the Wanamaker Bleriot; Willie Haupt, the automobile race driver, and others. It was intended to merge the Aero Club of Philadelphia and this new society into one organization, but the plan was not capable of fulfillment. Laurence Lesh was a guest at the meeting on Jan. 7.

The new club is to be state-wide in its scope, any resident of Pennsylvania being eligible to membership, and it is hoped to have a number of affiliated clubs in the various cities in the state. There is a committee looking for grounds and another inspecting various places for headquarters in the city.

The **University of Pennsylvania A. C.** started work during the holidays on an aeroplane to be called the "Philadelphia I," with the assistance of Laurence J. Lesh. A subscription was easily started, and will be continued, to defray the expenses of building the machine and fitting it with a motor.

The **Amherst Aero Club** has recently bought one of the gliders manufactured by C. & A. Wittemann of Staten Island, New York. So far, the time has been spent at the weekly gliding trials, in learning the balance and gaining confidence by using ropes. Every time a trial is made, big gains result, and it is soon expected to discard the ropes. The flights have been of 200 to 300 ft. Prof. David Todd is president and Weston W. Goodnow of New York, secretary.

The **Aeronautic Alumni Association** has been formed by the members of the recent class in aeronautics at the West Side Y. M. C. A., New York, of which Wilbur R. Kimball was instructor. Dr. Rex C. Northwood, 1777 Broadway, New York, is president. The A. A. A. is instituting a new series of model contests, and issues a challenge to any model flying club of the country to compete against its team. Acceptances are asked for, and may be addressed to Dr. Northwood. The new club will have talks and lectures at the Y. M. C. A., and will shortly start work upon a full-sized aeroplane.

An **Aviation Section** of the Professional Chauffeurs Association of America has been formed in Philadelphia. The seed was sown when several members of the Philadelphia branch of the P. C. A. of A. began gliding. Others became interested and it was decided to form a club. At a meeting held at their club house, 1933 Spring Garden St., a permanent organization was effected with the following officers: President, H. McGeorge, automobile designer; secretary-treasurer, John R. Tallis, mechanical engineer; board of engineers, "Willie" Haupt, the well known racing man, "Al" Truitt, formerly chief tester with the Chadwick Engineering Co., and the president and secretary ex-officio.

The purpose of the club is to carry on experiments in aviation until all the members who so desire become expert aviators. As soon as weather permits the interrupted gliding practice will be resumed with a new glider designed by Laurence J. Lesh. When sufficient skill has been attained flights will be attempted in a full size monoplane now under construction at McGeorge's garage.

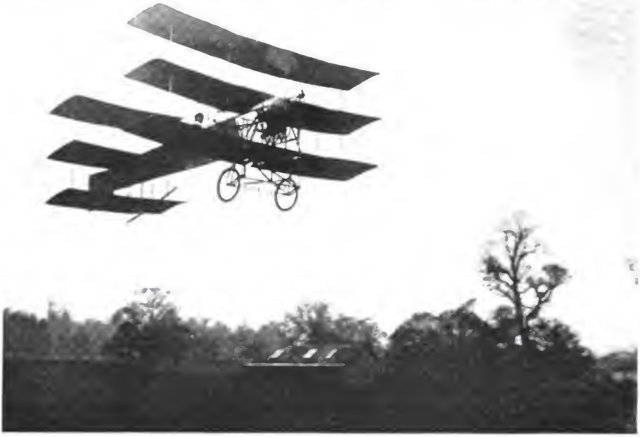
The present time is being spent in the study of the construction and design of aeroplanes with discussions by the members and addresses by practical men of experience in aeronautics and engineering, among the latter being Mr. Lesh, an honorary member, whose address on the use of model experiments and gliders was very interesting and instructive. Robert H. Ramsey, inventor of the Ramsey engine; Samuel King, the veteran balloon builder, and Carl H. Carson, of the U. of P., have also offered to assist.

The **Aeronautic Society** has accepted the invitation of the Genealogical Society and held its two last meetings at the G. S. Building at 226 West 58th St., New York. Future meetings will probably be continued at this address. The weekly meetings have been reduced in number to semi-monthly, on Thursday evenings, as usual.

The first meeting held at the new rooms lasted until midnight, and then a portion of the discussions had to be postponed to the next session. Carlos de Zafra, B.S., M.E., a well known marine engineer, was the principal speaker on propellers, the subject of the evening. He was followed by J. H. Edwards, an officer of the Aeromotor Co., manufacturers of windmills; Mr. Ritter, of the American Blower Co., who explained their method of testing blowers, illustrated by a model; P. W. Wilcox, of Columbia University; F. Charavay and Hugo C. Gibson.

At the next meeting Dr. Dwight Tracy, S. Y. Beach and Wilbur R. Kimball were the speakers. In addition a debate was inaugurated on the question of the best form of running-gear and landing devices.

The desire for an emblem of the Aeronautic Society has now been gratified. Among the several designs submitted to the committee, one furnished by J. A. Moller, New Rochelle, N. Y., was selected last month. It is made in three colors—gold, white and blue—in the shape of a pair of gold wings crossed by a white propeller interlocked with a blue ring, wherein the name of the society appears. It is very handsome and is made in two sizes. These can be secured from the secretary.



A. V. Roe Flying at Wembly *Edwin Levick Photo*

FOREIGN LETTER

Good Flying in England—Delagrange Killed in Aeroplane—Many Long and Cross Country Flights in France—Farman Wins Michelin Cup—New Speed Record—French Government Buys Aeroplanes—$100,000 Subsidy—$2,000,000 for German Airships

Algiers.

A Voisin machine has been flown during December by M. Metrot near Algiers. On Christmas Day a 14-kil. cross country flight was made, returning the following day.

Argentine and Brazil.

Six aeroplanes left Marseilles for Argentina and Brazil on December 24, including 3 Voisins, 1 Santos Dumont and 2 Bleriots. Aviators will be imported from France.

Austria.

The Austrian government now has a Parseval dirigible of 2,400 cu. m. capacity, 60 h.p. motor. Almost the first ascent made was one of 7 hours, over the city and in the country round about Vienna, covering about 260 kil. Twenty-seven thousand dollars is provided in the budget for dirigibles.

Herr Ettrich, whose novel gliding machine attracted wide attention the early part of last year, has been able to fly with his odd looking monoplane at Weiner-Neustadt, getting up to 4½ kils.

England.

The Hon. C. S. Rolls, Frank McClean and Alec Ogilvie have all been increasing the length of flights in their Wright machines, Mr. Rolls getting up to one of 20 minutes. Mr. Ogilvie, on December 2, flew out over the sea at Rye, remaining up 16 minutes. More sheds are being erected at the Aero Club's grounds at Eastchurch.

ROLLS FLIES CROSS COUNTRY.

The flying colony at Eastchurch was surprised late one afternoon to hear in the distance the sound of a motor. As the noise of the exhaust grew in volume, the cause was seen to be an aeroplane—that of Mr. Rolls. He had left the Short factory a short while before, after having some repairs made there and this flight of December 21, though, was quite a feat, as Mr. Rolls has not yet made any long flights, and the distance is about 15 miles.

ROLLS FLIES HIS WRIGHT AN HOUR.

January 1.—Mr. Rolls to-day flew for 55 minutes, when his motor gave trouble. Later in the day he took up a passenger.

On December 29th, Cody started on his trip from Liverpool to Manchester for the $5,000 prize but got only about 10 miles when he gave up on account of fog. Some wires suddenly loomed up out of the fog and he made a quick descent.

MRS. HARBORD IN CROSS-CHANNEL BALLOON TRIP.

The Hon. Mrs. Assheton Harbord in her balloon Virvana, with C. F. Pollock as pilot, and another male passenger made a cross-channel balloon trip from Battersea, December 18, at 4:20 p. m. After an exciting all night trip, the balloon landed near Hagen, Westphalia, a distance of about 330 miles. The greatest height was 8,000 ft., and the temperature dropped to 15 deg. above zero.

ROE SUCCESSFULLY FLIES TRIPLANE.

A. V. Roe, who has been struggling alone for years, has at last been able to fly very well with his tandem triplane at Wembley Park. He has not yet been able to turn on the small circular course. The twisting and tilting of the main planes for steering work very well. On Christmas day he broke up one side of the machine in turning too sharply, just after making several good short flights.

The firm of A. V. Roe & Co. has been formed to take up aeroplane manufacturing.

DETAILS OF ROE TRIPLANE.

Surfaces.—Three superposed main planes, each 20 ft. by 3 ft. 7 in., set at an angle of 5 deg. Three rear rigid superposed planes, each 10 ft. by 3 ft. 7 in. The total supporting surface is 320 sq. ft. The front planes tilt longitudinally for steering up and down. Oiled paper backed with muslin is used. There is a vertical rudder hinged to the rear end of the body frame, between the two lower horizontal surfaces of the tail section. The rear edges of the main planes also twist for steering right and left. All these movements are controlled by a single lever; pushed forward or backward for steering up and down, left or right for turning. The outer 6 ft. of main planes can be folded for housing.

Body.—Triangular in cross section of deal, cigar shaped plan view, covered. The aviator sits in a cockpit about 4 ft. back of the main planes.

Power Plant.—Motor, central between two lower main planes, 20 h. p., drives a 4-bladed propeller.

The great Brooklands motordrome has had a number of aeroplane sheds erected which are rented to aviators.

France.

DEATH OF DELAGRANGE.

The fourth man to be killed in power machines was Leon Delagrange, and all these four have met their deaths within the last 15 months.

RECORD MONOPLANE DISTANCE.

On Dec. 30, at Juvisy, he started to beat H. Farman's record, but was only able to stay up for 2 hours 31 minutes in his Bleriot monoplane covering 200 kil. This is the record duration for a Bleriot machine. The speed attained at one time was 55.89 m.p.h. A Gnome 45 h.p. motor was used in place of the Anzani 18 h. p. The distance was nearly equal to Farman's world record (232 kil.). Another trial was made on Jan. 4 at Bordeaux in a wind of about 20 m. p. h. As he was turning a corner of the aerodrome one wing broke under the pressure and the machine fell to earth, with Delagrange underneath, crushing out his life almost instantly.

FARMAN GETS MICHELIN $4000 AND CUP.

No one having exceeded the record of H. Farman, 144 miles in 4 hours 17 minutes, made Nov. 3, the Michelin 1909 cash prize and copy of cup was awarded Farman in recognition of that flight. Last year it was won by Wilbur Wright.

On Dec. 31, Latham, Singer, Farman and Legagneux were all entered for the contest. Latham's motor gave trouble and he came down after 1 hour 20 minutes. The others were able to make only short distances. Farman flew for 2 hours and then descended, as his previous record was not in danger.

H. Farman has adopted Chalons for his training ground, beginning the first of December. On Dec. 7 trials began with the new lighter, H. Farman, which Paulhan took to the States and which is supposed to fly at 80 k.p.h. Poplar has been used instead of ash, the details of construction have been improved and the weight greatly lessened.

PAULHAN CARRIES TWO PASSENGERS.

On Dec. 15 Paulhan took up two other passengers at one time in the new machine. These two had a weight of 330 lbs., to which must be added 10 gallons of gas.

ENGLISHMAN FLIES HOUR.

Mortimer Singer, an Englishman, has had good success at Chalons with the Henry Farman biplane, recently purchased. On Dec. 21 he flew for 1 hour 1 minute in the cold, a great thing for a novice who has had but a few lessons. The next day he took up Miss Dorothy Leavitt. Following days he continued making flights of 10 to 17 minutes' duration.

DE LESSEPS FLIES 90 MINUTES.

Jacques de Lesseps, son of the famous engineer who dug the Suez Canal, is one of the students at Issy on Bleriots. He made rapid progress and it was only his fourteenth flight when, on Dec. 16, he flew for 1 hour 30 minutes, qualifying for pilot's certificate.

This was the longest flight made on a Bleriot machine up to this date. On the 21st Lesseps started on a trial for several large prizes for cross-country flight. After going about 6½ km. the action of the motor caused a hasty descent and the machine was considerably damaged.

ANOTHER HOUR FLIGHT.

M. Chateau, instructor of the Voisin School at Chalons, started, on Dec. 12, to practice for the Michelin cup contest, remaining up 1 hour 1 minute 15 seconds, covering about 65 kil.

Latham continues teaching with the Antoinette at Chalons, where he has ten students. On one occasion he took up a moving picture operator and machine for the purpose of obtaining a film from an aeroplane. On Dec. 15, among other passengers, he took up Capt. Gerardville, one of the three taught by Wilbur Wright.

On Dec. 26, at Chalons Latham went up to 292 meters, intending to beat Paulhan's record, but the weather forbade. However, this won him the De Caters height prize. He made a flight of 39 minutes on the aeroplane bought by H. S. Harkness, an American. The Farman and Antoinette students made short flights.

84 MILES ACROSS COUNTRY.

Maurice Farman is making a specialty of cross-country flights. He has made another (Dec. 9) of about 43 miles, lasting 53 minutes, within 2 minutes of his previous record, from Buc to Chartres. He used the Renault motor, with Bosch magneto. On Dec. 31 he flew from Chartres to Orleans, about 43 miles, in an hour. One stop on the way was made to repair the motor.

NEW SPEED RECORD—59.6 M.P.H.

Pau, in the South of France, is now the principal flying ground. Here all the teaching on the Bleriot and Wright machines is being done. The 80 h.p., E.N.V.-engined, XII-type, 2-passenger Bleriot of Claude G. White, is being altered to reduce the speed for instruction work. On Nov. 28 last, an officially timed circular flight of 6 kil. was made at 96 k.p.h. (59.6 miles an hour), a new official average speed record. In the spring teaching will be begun near London. At Pau two pupils are now being taught, a half dozen others are coming and two ladies from London, in addition, have paid their tuition fees.

The most notable pupil on the Bleriot at Pau was Paulhan, who had to learn just like a "green" one, but it did not take long. This was in anticipation of his taking both Farman and Bleriot machines to the States. Other pupils come from many of the countries of Europe.

Tissandier resumed teaching on Wright machines at Pau on Dec. 15, with several students. On Christmas Day he made a couple of 15-minute passenger flights.

The last week in December two of the Pau class completed their course in flying, and their places were taken by others. On the 28th Leblanc made a 34-minute flight.

FRENCH GOVERNMENT BUYS AEROPLANES.

The French war department has ordered 3 Henry Farman, 1 Wright and 1 Bleriot aeroplanes and is negotiating with the Voisins. Experiments are also to be carried out with machine guns mounted on two Antoinette monoplanes. In each case the contract implies that an officer must be taught to pilot. Capt. Lucas Gerardville is already expert in piloting the Wright machine and he will possibly be the chief instructor of the military aviation school.

The Minister of War has accepted the offer made by the Lebaudy Bros. to replace the dirigible Republique.

$100,000 SUBSIDY FOR AERONAUTICS.

Baron Deutsche de la Meurthe has given the University of Paris $100,000 and an annual income of $3000 for the foundation of an aero technical institute.

MOTOR FALLS OUT IN FLIGHT.

A remarkable accident occurred on Dec. 21, when one propeller blade of Kuller's Antoinette broke while in the air. The other blades, being unbalanced, tore the engine from its bed, and dropped out of the aeroplane. The aeroplane glided to the ground almost normally, landing without an accident.

HUNDREDS OF AEROPLANES SOLD.

Bleriot is turning out machines at the rate of 6 a week. At the moment orders in hand total 186, and new orders are accepted only for delivery in 3 to 4 months.

More than 60 aeroplanes are ready to be delivered to their purchasers by the Antoinette, Voisin and H. Farman shops. These are waiting for fine weather.

A prize has been offered for the longest time consumed in flying a kilometer; speed must be less than 28 m.p.h.

On Jan. 5, Santos Dumont had another accident with his "Demoiselle" at Buc. One of the wires snapped and the machine "turned over three times" while falling. M. Dumont was slightly bruised.

Santos Dumont met with an accident at St. Cyr on Dec. 10, when a gust of wind caused a broken wing after a quarter-hour flight.

Hayden Sands, who learned to fly an Antoinette is in Egypt, to give exhibitions. He will enter the Cairo meet in February.

Sommer has sold his Henry Farman and is building a monoplane and a biplane of his own.

Germany.

$2,000,000 FOR AIRSHIPS.

The Gross I dirigible has been refitted since the accident last fall, being lengthened 8 m. and given more horsepower, so that she is now nearly identical with the Gross II. It will be stationed at Cologne.

Two million dollars is provided in the budget for construction of dirigibles.

The trials of the military airship Gross III have begun. A speed of 37½ m.p.h. was attained with four 4-bladed propellers, each driven by a separate motor. Steering up and down is by displacement of water in the rigid frame.

The Gross III and the Parseval III have been accepted by the military authorities and will be kept at Tegel for some time.

The German war department has decided not to buy the Zeppelin III at the price offered, $140,000, on account of the many improvements made in the Zeppelin IV, one of which is the use of "electrum" in the framework, greatly reducing the weight.

Major von Parseval, the designer of the Parseval airship, has been appointed to the chair of aeronautics at the Univ. of Charlottenburg.

OTHER NEW GERMAN DIRIGIBLES.

A new German dirigible, named the "Erbsloh," was tried out on a 2-hour trip on Jan. 11, Oscar Erbsloh, the winner of the 1907 St. Louis balloon race, in command. On the 12th of December it was intended to make a long trip, but a slight repair necessitated a descent. The airship could not be kept head-on in the strong wind and eventually a gust of wind tore the ropes away and the bag floated away free from the frame and motor. The bag went only a short distance, where it burst open, apparently lengthwise of the bottom side.

A new dirigible, the Parseval V, has made its first trials at Bitterfeld.

Italy.

Engineer Farlanini's airship, the "Leonardo da Vinci," has made its first short ascents. On Dec. 15 it visited Milan from its shed at Crescenzago, remaining up for 1 hour 20 minutes, covering 32 kil. It is a semi-rigid, only the upper half being filled with gas. Its capacity is 2500 cu. m., 40 h.p. motor.

The government has started the construction of a $100,000 shed at Verona to house two airships.

Turkey.

Bleriot met with a serious accident in his flight at Constantinople the first half of December. A large crowd had assembled and waited impatiently for flying to begin. At last, in spite of a strong wind. Bleriot determined to start. The wind carried him toward some houses and, unable to rise high enough, he crashed head-on against the side of one of them. Then he, with his wrecked machine, dropped to the ground in the back yard.

RESULTS LOS ANGELES MEET.

New World's Records.

Los Angeles, Jan. 17.—Seven days have passed since the beginning of Los Angeles big "aviation week," and while the Curtiss aeroplanes, the only ones besides Paulhan's to fly, have all made fine flights, Paulhan, out in all kinds of weather with his two Farmans, has been the "whole show."

Paulhan's Bleriot machines have done little, only making one official lap of 1.611 mile thus far. Both of them were broken in the flights, evidently due to the non-use of the warping device and to the inexperience of the widely heralded French aviators who, with the exception, of course, of Paulhan, seem to be only mechanics and not flyers.

Glenn H. Curtiss has his 8 cyl. Rheims machine here, Charles K. Hamilton and Charles F. Willard have the stock type 4 cyl. Curtiss machines, the Beachey and Knabenshue and the U. S. Government dirigibles are here, Howard W. Gill of Baltimore has his machine, almost a copy of the Curtiss, but with a different engine. It has met with several accidents. Several balloon ascents have been made.

RESULTS OF THE MEET SO FAR.

Height—Paulhan broke world's height record, going up 4,165 ft., and made unofficial cross country flight of about 28 miles.

World Record for Quick Start—Curtiss left ground in 98 ft. Fastest rise from start of motor, 6 2-5 seconds.

One Lap—(1.611 mile) 1st, Curtiss in 2:12; 2nd, Paulhan in 2:21 1-5. With C. F. Bishop as a passenger Paulhan did it in 2:30. The Knabenshue dirigible took 5:10 2-5.

Ten laps—1st, Curtiss, 24:54 2-5; 2nd, Paulhan, 24:59 2-5; 3rd, Hamilton, 30:34 3-5.

Slowest Lap—1st, Hamilton, 3:36 2-5.

Willard wins contest for perfect start and perfect landing in 20-ft. square.

Paulhan makes 3 laps with one passenger in 8:16 1-5.

Curtiss, with Jerome S. Fanciulli as passenger made unverified speed of 55 m.p.h. in short flight.

Paulhan is to try for world's record duration and distance to-day. The Government dirigible is being inflated.

COURT GIVES WRIGHTS INJUNCTION

SAYS CURTISS INFRINGES.

Action of Judge Great Surprise.

CURTISS WILL APPEAL.

NEW YORK, Jan. 7.—Judge Hazel, of the Circuit Court of the United States, in Buffalo, granted, on Jan. 3, a preliminary injunction to the Wright company restraining the Herring-Curtiss company and Glenn H. Curtiss from manufacturing, selling or using for exhibition purposes the Curtiss aeroplane.

Following is the opinion rendered, almost in toto. Starting out with a statement of why a gasless flying machine flies, the Judge then cites paragraph 7 of the Wright patent, saying:

"The claims relied upon are the seventh, fourteenth and fifteenth. It is sufficient to here set forth the seventh claim, which in broad terms includes both the monoplane and biplane types of apparatus:

'7. In a flying machine, the combination with an aeroplane, and means for simultaneously moving the lateral portions thereof into different angular relations to the normal plane of the body of the aeroplane and to each other, so as to present to the atmosphere different angles of incidence, of a vertical rudder, and means whereby said rudder is caused to present to the wind that side thereof nearest the side of the aeroplane having the smaller angle of incidence and offering the least resistance to the atmosphere, substantially as described.'

"The essential elements of such claim are an aeroplane or supporting surface, the lateral portions of which are capable of adjustment to attain different angles of incidence, and a vertical rudder in the rear of the machine. Claims 14 and 15 included as elements a horizontal rudder, which is positioned forward of the machine, and means for raising and lowering it so as to present its upper or under side to the pressure of the wind."

Judge Hazel goes on to explain that the surfaces of the Wright machine "are connected together by upright stanchions extending lengthwise on the extreme front and rear portions thereof, and are fastened on top and bottom of the planes by universal joints so as to permit the planes or surfaces to yield to pressure and incline upward and downward at their lateral edges or marginal extremities when the cord or rope fastened to the cradle is manipulated by the aviator. This lateral yielding, warping or distorting of the aeroplanes is the essential feature by which the equilibrium is secured. Its importance cannot be overestimated, as it is shown that long before the Wright invention a method was sought by which equilibrium in mechanical flying could be secured and maintained. Not only the conception of the idea of securing and maintaining equilibrium in the air, but the appliances—the dynamic cause to achieve the result—originated in the minds of the patentees and took shape and form in the evidently simple method of slightly turning up and down the lateral ends or margins of the planes, thus securing different angles of incidence. The insurmountable obstacle with which prior inventors in this art struggled for years was the precipitate unbalancing or upsetting of the apparatus, and such prior flying machines were therefore incapable of flights with any appreciable degree of success. The affidavits indicate that the patentees did not use the means or identities of prior flying machines, but solved the problem of maintaining equilibrium or lateral and front and rear balance by the introduction of new and practical elements and became pioneers in the field of flying machines of the so-called heavier-than-air type. True, some of the elements of the claims were old, and also shown in the prior gliding machines, but such machines without the combination which included a method of maintaining equilibrium or lateral balance were utter failures. Hence the prior patents and publications apparently do not anticipate the Wright patent, and the claims in controversy are entitled to a broad and liberal construction.

"The Wright patent is unadjudicated, but such fact will not deprive the claimant of its right to enjoin infringement, save where the prior act shows sufficient ground to doubt the validity of the patent."

It is argued by the Judge in the present case "public acquiescence is claimed," it appearing that Wright machines have made "notably successful flights in France, Germany and the United States." He recites the first flight to which the attention of the public was attracted, that at Kitty Hawk, in December, 1903, and points to the heralding by the newspapers of the country of the marvelous success attained, that human flight had at last been first made possible by the Wrights. He calls attention to public recognition of their success by organizations and by the presentation of medals, citing two cases where such testimonials have been entitled to weight in support of the presumption of validity and practical utility. That both Curtiss and Herring obtained "detailed information prior to the construction" of the Curtiss machine, as to experiments made by the Wrights on "the pressure of wind on curved and flat planes and mode of maintaining equilibrium in flights, the former through correspondence" between the Wrights and Lieutenant Selfridge and "the latter from personal observation and investigation by Herring" at the Kitty Hawk camp, is set forth by the Judge.

He mentions Herring's affidavit, in which Herring asserts that he considered the Wright invention was "limited to the lateral warping of the planes, and not that it covered broadly the feature of lateral balancing."

This brings the Judge to the question of whether the Curtiss machine infringes the Wright. He says:

"Defendants claim generally that the difference in construction of their apparatus causes the equilibrium or lateral balance to be maintained and its aerial movement secured upon an entirely different principle from that of complainant; that defendants' aeroplanes are curved, firmly attached to the stanchions and hence are incapable of twisting or turning in any direction; that the supplementary planes or so-called rudders are secured to the forward stanchion at the extreme lateral ends of the planes and are adjusted midway between the upper and lower planes with their margins extending beyond the edges; that in moving the supplementary planes equal and uniform angles of incidence are presented as distinguished from fluctuating angles of incidence. Such claimed functional effects, however, are strongly contradicted by the expert witness for complainant. Upon this contention it is sufficient to say that the affidavits for the complainant so clearly define the principle of operation of the flying machines in question that I am reasonably satisfied that there is a variableness of the angle of incidence in the machine of defendants which is produced when a supplementary plane on one side is tilted or raised and the other simultaneously tipped or lowered. I am also satisfied that the rear rudder is turned by the operator to the side having the least angle of incidence and that such turning is done at the time the supplementary planes are raised or depressed to prevent tilting or upsetting the machine. On the papers presented I incline to the view, as already indicated, that the claims of the patent in suit should be broadly construed; and when given such construction, the elements of the Wright machine are found in defendants' machine performing the same functional result. There are dissimilarities in the defendants' structure —changes of form and strengthening of parts— which may be improvements, but such dissimilarities seem to me to have no bearing upon the means adopted to preserve the equilibrium, which means are the equivalent of the claims in suit and attain an identical result.

"Defendants further contend that the curved or arched surfaces of the Wright aeroplanes in commercial use are departures from the patent, which describes 'substantially flat surfaces,' and that such a construction would be wholly impracticable. The drawing, Fig. 3 however, attached to the specification, shows a curved line inward of the aeroplane with straight lateral edges, and considering such drawing with the terminology of the specification, the slight arching of the surface is not thought a material departure; at any rate, the patent in issue does not belong to the class of patents which requires narrowing to the details of construction."

The Mattullath patent application is thrown out of consideration "as an unsuccessful experiment."

The date when machines alleged to be infringements of the Wright first made their appearance is now put on record. The Judge states:

"Indeed, no one interfered with the rights of the patentees by constructing machines similar to theirs until in July, 1908, when Curtiss exhibited a flying machine which he called the 'June Bug.' He was immediately notified by the patentees that such machine with its movable surfaces at the tips of wings infringed the patent in suit, and he replied that he did not intend to publicly exhibit the machine for profit, but merely was engaged in exhibiting it for scientific purposes as a member of the Aerial Experiment Association. To this the patentees did not object. Subsequently, however, the machine, with supplementary planes placed midway between the upper and lower aeroplanes, was publicly exhibited by the defendant corporation and used by Curtiss in aerial flights for prizes and emoluments. It further appears that the defendants now threaten to continue such use for gain and profit, and to engage in the manufacture and sale of such infringing machines, thereby becoming an active rival of complainant in the business of constructing flying machines embodying the claims in suit, but such use of the infringing machine it is the duty of this court on the papers presented to enjoin.

"The requirements in patent causes for the issuance of an injunction pendente lite—the validity of the patent, general acquiescence by the public and infringement by the defendants —are so reasonably clear that I believe it not improbable that complainant may succeed at final hearing, and therefore, the status quo should be preserved and a preliminary injunction granted.

"So ordered."

Emerson R. Newell, counsel for the Herring-Curtiss Co., will appeal from the opinion of Judge Hazel. Following is a necessarily short statement of some of the claims made by both parties to the suits, taken from the briefs. H. A. Toulmin, in behalf of the Wright company, takes up 163 printed pages, with illustrations.

The above decision of Judge Hazel is almost entirely an exact transcript. We have merely put in fewer words the less important paragraphs. The grounds for the Judge's view of the situation as related by him are the most important, as they constitute the corner-stone of the structure the Wrights are endeavoring to erect. It is impossible, of course, to give the arguments of both sides. The decisions themselves from the various lawsuits which have now been started, and will, no doubt, be started in the future, are the main items of interest.

Extracts From Briefs.

It would be impossible to abstract the briefs submitted in the Wright-Curtiss injunction suit. A great deal of space is taken up in Mr. Toulmin's brief in going into the history of aviation, and to the riddling of A. M. Herring's affidavit to the effect that in 1894 he made use of movable auxiliary surfaces.

The question of whether or not movable auxiliary surfaces, or popularly "wing tips," are infringements of the Wright patent seems to be uppermost in the minds of the aeronautical public. Less attention has been given the subject of prior art and the question of the front rudder. In the briefs the point as to whether it is necessary with the use of wing tips to turn the rear rudder to the high side is brought out quite prominently.

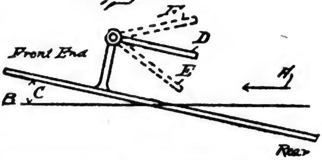
Herring speaks in his affidavit of the necessity of adjusting a vertical tail whenever the angle of incidence of lateral tips are unequal. He says: "In my 1894 gliding machine I found it necessary to use the vertical rudder in preserving a straight course, when I corrected the side equilibrium by using the auxiliary surfaces." This statement of Herring's seems to contradict the affidavit of Mr. Curtiss, in which he says in regard to his own machine: "There is no necessity or reason for swinging the vertical rear rudder when the balancing rudders are swung, because (as both balancing rudders are of the same size and area and present to the atmosphere the same angle of incidence), the resistance of the forward motion of the machine is the same for each rudder."

HOW EQUILIBRIUM IS OBTAINED.

To explain the securing of lateral equilibrium in the Wright machine, for instance, by increasing and decreasing the respective angles of incidence at opposite sides of the machine, Mr. Toulmin employs the sketch Fig. 3, showing a "supplementary plans, wing, tip or marginal portion" (D); "* * * and assume that there is another just like it at the far side." "This adjustment (E) will put the supplementary plane or margin at a greater positive angle of incidence than that of the main plane. * * * If the distant supplementary plane or margin be adjusted up to the angle indicated at F, its angle of incidence will have been changed from positive to negative. * * * When, however, the two supplementary planes are adjusted at equal angles from position D, taking up positions E and F, respectively, it will be seen that with reference to line B, from which the angle of incidence must be determined, E is at one positive angle of incidence and F is at a negative angle of incidence less in degree, F then offering the lesser resistance to the advance movement through the air. The result would be that the side of the machine having the supplementary plane or margin, F, would advance more easily and with greater rapidity than the side having the supplementary plane or margin E. This would bring about an undesired turning of the machine, from its intended course, about a vertical axis. Now, then, in the Wright patent this tendency of the machine to so turn on a vertical axis, when the supplementary planes or margin are adjusted to effect a correction of careening or lateral tipping, is compensated for by adjusting a vertical rear rudder, which brings into action the compensating counter-turning force."

The Wright brief goes on to state that in the Wright machine itself the rear corners of the main planes are adjusted simultaneously "to equal angles from the normal or then inclination of the main aeroplane" and that it follows from the explanation given in connection with Fig. 3, "the two adjusted marginal portions will have different angles of incidence to the line (B) of flight * * * and hence will offer different degrees of resistance at the respective sides of the machine." This operation brings about the turning of the machine on its vertical axis and the giving to the right-hand side a higher relative speed and tending to "increase the lifting tendency of the right-hand side, even though the angle of incidence is inferior. If this condition goes on unchecked, the machine will lose its lateral balance entirely and is likely to tip edgewise and fall."

Fig. 3



In flying the angle of incidence is stated to be constantly changing, these changes being brought about by necessary manipnlation of the front rudder.

CONSTANT VARIATIONS IN ANGLE OF INCIDENCE.

The Wrights say in an affidavit: "The angle of incidence in the main planes varies with every variation in the direction or force of the wind; with every variation in the power of the motor; with every variation of the path of the machine from a uniform line, and with every variation of the load." This is explained as follows: "Since in a flying machine the lift is equal to the total weight of the machine, it is evident that if the speed is increased, a smaller angle of incidence will furnish the required lift, while if the lift is decreased a larger angle will be required. It is further evident that when two men are carried the angle will be greater than when one is carried, * * * moreover, when the power of the motor increases or decreases, the speed increases or decreases; * * * even with constant power the speed varies, according to whether the machine is ascending or descending and the angle of incidence correspondingly increases or decreases." They also state that in an hour's flight the angle of incidence will be greater or less than a specified normal angle 59 minutes out of the 60.

Up to this point Mr. Toulmin has avoided making any distinction between supplementary planes (or "wing tips," as popularly called) and the warping of the main plane itself. The words "supplementary aeroplane," "tip," "marginal portion," "supplementary plane or margin" and "wing," are used interchangeably.

In beginning a detailed discussion of the Curtiss machine, attention is called by Mr. Toulmin to the alleged fact that "these adjustable margins constitute, in effect, portions of the aeroplanes" (main supporting surfaces).

WING TIPPING SAME AS WARPING.

He says: "These marginal portions or tips of defendants' machine are nothing more or less than parts of the main aeroplane set lower than the upper and higher than the lower main plane. They are at the lateral extremities of the machine, just as in complainants' patent; they extend out beyond the more rigid part of the main aeroplanes, just as in complainants' patent. * * * When either of them is at a positive angle it has a supporting function, the same as do the complainants' marginal portions." The function of these is to "maintain the lateral balance * * * while in flight and to control the right and left direction * * * in co-operation with the rear vertical rudder."

The mechanical operation of the Curtiss wing tips is then described. This information has been printed in AERONAUTICS and is well known, so that it need not be repeated here.

By the mechanical means the Wright affidavit says, "these marginal tips are under the immediate control of the operator and are adjustable to various and different angles of incidence, to different angles relatively to each other and to different angles relatively to the main body of the aeroplanes. That these marginal tips may be all the more in the nature of continuations of the main curved supporting surfaces or aeroplanes, they are made of curved form, with the concave side beneath. * * * When these curved marginal tips are adjusted at equal angles of incidence, the convex surface presented by the one will not receive the same horizontal resistance due to the wind pressure as will the concave surface presented by the other. So this concave-convex formation of these marginal tips produce unequal horizontal resistance at the opposite sides of the machine. * * *

"These margins constantly maintain different angles of incidence to the line of flight, due to the constantly varying angle of incidence of the main surfaces to the line of flight * * *. It will be seen that in defendants' machine, when one side tends to depart from horizontal balance * * * the operator immediately brings the machine back to normal equilibrium by throwing the marginal tip downward at the side of the machine which it dropped too low * * * and by raising the marginal tip upward at the side of the machine which is too high. * * * In this way the lateral equilibrium is regained. But the marginal tip with the greater angle of incidence, while having a greater lifting effect, will also produce increased drift, or retardation of the speed, of that side of the machine, and, too, the side with the smaller angle of incidence will likewise decrease drift or lessen resistance, which will cause said side to run ahead of the other. So the act of regaining lateral equilibrium tends to divert the machine out of course or to one side or the other. And the accelerated speed of the side with the smaller angle of incidence also tends to increase the lift of that side, and which, if not checked, would prevent maintaining lateral equilibrium. It is here that the co-operation of the rear vertical rudder comes into important action. This action consists in turning it, at this time, so that it will swing to the side of the machine whose tip has the smaller angle of incidence, and thus will check the accelerated flight of that side and hold the machine to its true forward course, without lateral divergence, while the act of recovering lateral balance is in progress through the increased lift at the side where the tip has the greater angle of incidence. That the operator in defendants' machine can perform these operations, he keeps himself constantly connected with the operating means by which these marginal tips and this rear vertical rudder are actuated. For actuating this rear vertical rudder he utilized a hand wheel, with which is connected the cable, that extends to the rudder. So when he shifts the yoke or cradle, G, with his body, he likewise adjusts the rudder with the wheel to the extent required. We state to the Court that such is the operation of defendants' machine, the disingenuous statements as to the rudder made in defendants' affidavits not stating the real facts in regard to the uses of this rudder. Mr. Curtiss even says he can leave off the rear vertical rudder, but we state to the Court that he has made no flight, and could make none, without the presence and use of this rudder, as we here describe the same."

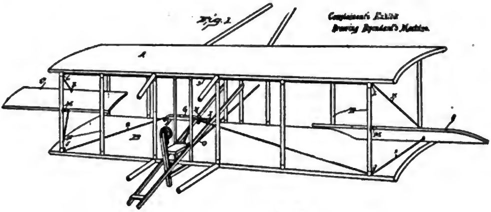


Fig. 1

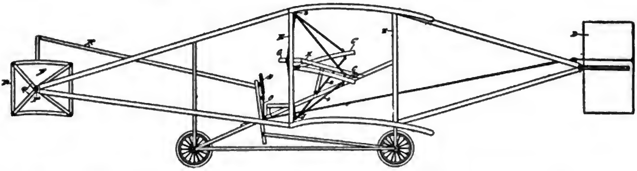


Fig. 2.

Mr. Toulmin continues: "The remaining feature of the defendants' machine * * * is the forward horizontal rudder. * * * The angle of the surfaces * * * can be adjusted to different angles of incidence so as to cause the machine to tend upward or downward and thus control its horizontal course. This forward rudder co-operates with the adjustable tips, C, C^1, in controlling the up and down direction, while and at the time the horizontal balance is being controlled; and also co-operates with the marginal tips should they be in a neutral position, and thus tend to act as supporting surfaces."

"It now sufficiently appears that the mechanism, mode of operation and result of defendants' machine correspond exactly" with the same disclosed in the complainants' patent. (Claims 7, 14 and 15 cited and comparisons made with the Curtiss machine.)

"HERRING OUGHT TO KNOW BETTER."

Alleging that the Curtiss side bases its contention on the theoretical assumption, "an assumption utterly without foundation in fact, impossible in flight, and contradicted moment by moment as defendants' machine flies," that the Curtiss machine in flight maintains one certain angle of incidence, in which "assumed position they say their marginal tips are at equal angles above and below the air pressure line." Mr. Toulmin fires a broadside of language when he says: "The defendant Curtiss knows better; the defendant Herring ought to know better, and defendants' counsel, who acted as expert, knows nothing about the matter."

WRIGHTS CLAIM CURTISS WING TIPS CURVE.

Referring to a blue print put in evidence by the Curtiss forces showing the defendants' balancing rudders, the Wright Brothers testify, "Mr. Curtiss is disingenuous in that he represents these balancing rudders as planes, whereas in fact they are segments of cylinders having the convex side upward and concave side downward, and are arched in the same direction as the main planes. * * * We have confirmed this fact by personal examination of the defendants' machine. * * * We assert that, even if the two balancing surfaces are presented to the wind at equal angles of incidence, one above and the other below the neutral position, the convex surface presented by one will not receive the same horizontal resistance as the concave surface presented by the other, and the aeroplane will tend to turn about a vertical axis. * * *

"Mr. Curtiss assumes that the so-called normal position of the balancing rudders, from which they are adjusted equal distances in opposite directions up and down, is always in line with the direction of the machine through the air, and therefore in line with the relative wind. This is a false assumption. * * *

WHY CURTISS WING TIPS ARE AT DIFFERENT ANGLES.

"In order to show the court the true angular relations of the adjustable tips of defendants' machine to the wind, we present a corrected sketch marked 'Complainants' Diagram of Operation of Defendants' Machine.' Fig. 1 is the position shown by defendants' sketch, with one tip, XC, inclined downward 10 degrees from the normal position XL, and the other tip XC¹ inclined upward 10 degrees from the same line. Fig. 2 represents the machine with the motor throttled a little, in which case the main aeroplanes must be inclined a little more in order to provide support for the machine at the lower speed. The post B will then be inclined backward four degrees and the neutral position XL will be rotated in the same direction four degrees from the horizontal, and the side rudders XC¹ and XC will likewise be rotated four degrees from the positions shown in Fig. 1. In fact, the entire machine will be rotated together four degrees from the original position. The angle of incidence of XC¹ which was originally ten degrees, will now be 10 minus 4, or six degrees while the angle of incidence of XC will be 10 plus 4, or fourteen degrees. Although both rudders are adjusted to equal angles from the normal position XL, there is a difference of eight degrees in their angles of incidence. Under this condition the claim of Mr. Curtiss that the angles of incidence must always be equal when the rudders are adjusted equal distances from the normal position XL is manifestly untrue.

"Fig. 3 represents a case where the speed of the machine is still lower and the angle of incidence greater by eight degrees than in Fig. 1, and four degrees greater than in Fig. 2. This results in an angle of incidence on XC of 10 plus 8, or eighteen degrees; while the angle XC¹ is 10 minus 8, or two degrees. Thus one tip will have nine times as great an angle of incidence as the other, instead of having equal angles."

WRIGHT MACHINE NOT LIKE PATENT.

Wright Brief—"It is to be understood that in the aeronautical art aeroplanes may be flat, or substantially so, or decidedly curved and be mechanical equivalents of each other in every sense of the patent in suit."

Curtiss Brief.—"In the only form of the device shown in the (Wright) patent in suit each 'aeroplane' * * * is absolutely flat, and the only place where any other form is hinted at is in" (these) "lines * * * : 'These surfaces may receive more or less curvature from the resistance of the air * * *.' "

"It must be kept in mind * * * that the machine of the patent is a gliding machine, and that therefore any prior gliding machine is available as prior art. In fact the patentees * * * admit * * * that the patent in suit is merely an improvement on prior machines, for they state that: 'Our invention relates to that class of flying machines in which the weight is sustained,' etc., showing that this class of heavier than air gliding machines was a well-known class of invention. * * * In one or two places in the specification it is specified that power might be applied to it for propulsion, but no description of how the same could be applied is given, and therefore it must be assumed that * * * it would involve no invention to apply power to any glider." Brief also alleges that certain lines in Wright patent (28-50, page 5), "admit that machines of this character provided with a forward horizontal rudder and a rear rudder were old."

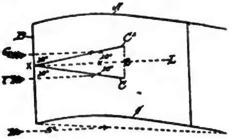


Fig. 1.

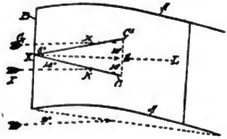


Fig. 2.

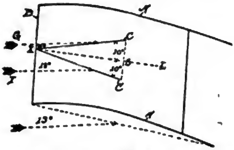


Fig. 3.

It is alleged in the Curtiss brief that the only means described or hinted at for restoring equilibrium in Wright patent is the warping of the main supporting surfaces themselves. Attention is called to wording of specification, the record of application and what patentees then stated to their attorney.

CURTISS' DESCRIPTION OF HIS OWN MACHINE.

The Curtiss machine is described by Mr. Newell as follows: "It has two main supporting surfaces, both of which are curved * * * and are absolutely rigid at all times and cannot be moved, warped or distorted in any manner. The front horizontal rudder is used for steering up or down, and the rear vertical rudder is used only for steering to the right or left, in the same manner as a boat is steered by its rudder. The machine is provided at the rear with a fixed horizontal surface, which is not present in the machine of the patent, and which has a distinct advantage in the operation of defendants' machine, as will be hereafter discussed.

"Defendants' machine does not use the warping of the main supporting surfaces in restoring the lateral equilibrium, but has two comparatively small pivoted balancing surfaces or rudders. When one end of the machine is tipped up or down from the normal, these planes may be thrown in opposite directions by the operator, and so steer each end of the machine up or down to its normal level, at which time tension upon them is released and they are moved back by the pressure of the wind to their normal inoperative position.

"When defendants' balancing surfaces are moved they present equal angles of incidence to the normal rush of air and equal resistances, at each side of the machine, and there is therefore no tendency to turn around a vertical axis as is the case of the machine of the patent, consequently no reason or necessity for turning the vertical rear rudder in defendants' machine to counteract any such turning tendency. At any rate, whatever may be the theories in regard to this matter, the fact is that the operator of defendant's machine does not at any time turn his vertical rudder to counteract any turning tendency due to the side balancing surfaces, but only uses it to steer the machine the same as a boat is steered."

"The complainants in their rebuttal affidavit have introduced an exhibit entitled "Drawing Defendants' Machine," which shows an exaggerated and distorted machine apparently different from that set forth in their moving affidavit."

CURTISS MACHINE NOT AN INFRINGEMENT.

"The position of the complainants is that, although the defendants' device does not answer the wording of the claims in suit, it is an equivalent construction. Even with such broad interpretation as the complainants contend for, they substantially admit that each of the claims is limited to a construction in which the device must present different angles of incidence to the air and have a consequent turning tendency caused thereby, and that the rear vertical rudder must necessarily be used to counteract such turning tendency. Even with such a legal construction of the claims, defendants do not infringe. Defendants' machine does not answer the claims as worded, nor when construed according to the actions taken in the Patent Office and the interpretation of the claims put upon them thereby, and this, too, without taking into consideration the prior art constructions."

Mr. Newell goes on to say: "Complainants' conclusions, therefore, rest solely upon their theories as to what ought to occur in defendants' machine, and their conclusions fall to the ground unless their theories are correct. Their theories, however, have been riddled by Mr. Curtiss' affidavit in rebuttal, where he shows not only that the actual facts are that there is no appreciable difference of pressure on, or resistance offered by defendants' balancing surfaces, but that the vertical rudder is in fact not turned to counteract any turning tendency when the planes are warped. * * * The facts" (are) "directly denied by Mr. Herring and Mr. Curtiss (who are the ones * * * who really know about the operation of defendants' machine), but complainants' theories, even if true at any time, are shown to be founded on false or erroneous assumptions, and at most to be true only for an instant of time not sufficient in length to cause the results which they seem to think must necessarily flow from such theoretical causes. Mr. See's affidavit and that of the Wrights admit that the condition shown in Fig. 3 of the 'Curtiss Sketch,' and in Fig. 1 of Complainants' 'Diagram of Operation of Defendants' Machine,' if true, would not result in a difference of resistance or difference in angle of incidence, and they have put in Figs. 2 and 3 to try to show that the Fig. 1 condition is not the normal. This has been demolished in Mr. Curtiss' affidavit in rebuttal where it is shown that the Fig. 1 condition is the normal, and the condition shown in Figs. 2 and 3 only occurs instantaneously, and not for a sufficient length of time to cause any turning of the machine. Furthermore, even the condition of Figs. 2 and 3 does not occur when the wind changes strike the machine, for at that time, as specified by Mr. Curtiss the balancing surfaces are in their normal position and therefore meet the change of the air current at equal angles and with equal resistances, and before the balancing surface could be moved by the operator the normal condition shown in Fig. 1 reoccurs with its consequent equality of angles on incidence and consequent equality of resistances, instead of with an inequality of the same. Mr. Curtiss' affidavit also shows that the practical result in actual flight is the same whether the balancing surfaces are absolutely flat or are slightly curved.

"These results in defendants' machine are of a distinct advantage, and apparently could not take place in the machine of the patent in suit because, as explained in the Newell affidavit, the warping of the flat main supporting surfaces must of necessity result in a difference of angle of incidence, and consequent difference of resistance on the two sides. Consequently the operation of the rear vertical rudder to counteract a consequent turning tendency is unavoidable in the machine of the patent, but is not a necessity, and is not actually done in any of defendants' machines.

"The function of presenting to the atmosphere different angles of incidence and different resistances as specified in the claims in suit, obviously refers to a time when the balancing devices (whatever they may be), are actually operated for the purpose of restoring the equilibrium, and not at some time when they are not so operated. The record shows that when the equilibrium is restored in the patent in the suit, the function specified in the claims must, of necessity, occur, but they do not occur when defendants' balancing surfaces are moved.

"In short, even assuming that a legal construction of the claims as broad as the complainants contend for is allowable, the question of infringement, as substantially admitted by the complainants, depend upon theories and facts which are asserted in the moving affidavits, but equally strongly denied in the defendants' affidavits, and complainants' position depends not only on the correctness of the theories advanced by them upon the application of those theories to the actual facts. * * *

"That the word 'aeroplane' of the claims means a flat surface as shown in the patent in suit, as distinguished from a curved surface, is furthermore corroborated not only by Lieut. Selfridge, but also by the Wright Brothers themselves. In the letter of Lieut. Selfridge, on pages 16 and 17 of the Wrights' moving affidavit, he states:

"'Will you kindly tell me what results you obtained on the travel of the center of pressure both on aerocurves and aeroplanes?'

"In reply of the Wright Brothers to that letter, they state:

"'The travel of the center of pressure on aeroplanes is ———. The center of pressure on a curved surface is approximately ———.'

"These letters not only show that an uninterested party who was delving into this art, considered that an aeroplane meant a flat surface as distinguished from a curved surface, but the reply of the Wright Brothers shows that this was what they considered themselves even as late as 1908. These facts corroborate the defendants' contention that in the patent in suit the word "aeroplane" means a flat surface, and not a curved surface, and that the claims in suit are so limited.

There will be an Aeronautical Section of the Automobile Show at the Essex Troop Armory, Newark, N. J., Feb. 19 to 26.

News In General

Internal Fight in Herring-Curtiss Co.

The friction between Glenn H. Curtiss and A. M. Herring, which has been threatening to burst into flame all summer, came up to expectations when, at a directors' meeting on Dec. 18, action was brought in the courts to compel A. M. Herring to turn over his patents and other property to the company, and an injunction was obtained to restrain him from disposing of any of his stock in the $360,000 concern. These patents are alleged to include features which it was expected he would utilize in the aeroplane he failed to deliver to the United States Government.

COUNTER SUIT BY HERRING.

In a suit brought by Herring, majority stockholder and vice-president of the company, the officers and directors are restrained from further favoring Curtiss until his suit is tried. He alleges that, to the financial detriment of the concern, the directors allowed Curtiss to enter contests and give exhibitions, retaining prizes and profits for his personal bank account; that Curtiss, also a vice-president, was employed as a "driver" of aeroplanes by the company to advertise the machine and stimulate sales.

The order granted restrains the defendants pending trial from borrowing money and from releasing assets or giving to Glenn H. Curtiss or others any privileges except those in performance of contracts made prior to October 25, 1909. The order restrains Glenn H. Curtiss in particular from "any further breach of his contract" with the Herring-Curtiss Co.

Curtiss' contract, according to Herring's petition, was for a period of three years from March 30, 1909. It bound him to refrain from flying in any other machine besides the Herring-Curtiss biplane, and gave him $5,000 a year for his services in making flights to advertise the Hammondsport product. Justice Coman has enjoined Curtiss from making any flights except in performances of this contract.

The contract between Curtiss and the Herring-Curtiss Co. was signed, Herring says, on March 20, 1909. For $5,000 a year Curtiss agreed for three years to fly exclusively for the Herring-Curtiss Co. and to turn over any invention he might conceive to the company.

Hammondsport, N. Y., Jan. 11.—The Curtiss plant is temporarily closed down. Whether this action is the result of the Wright injunction proceedings or whether it is a move in the internal fight with Herring is not known.

P. Y. Alexander Visits America—His $5,000 Prize.

Patrick Y. Alexander, the "international aeronautical missionary," has just left for his home in England on the same ship with Minister Wu, after a four-day visit. This is an unusually long stay for Mr. Alexander, as his record is one day.

Mr. Alexander is known all over the world as the modern patron saint of aviation. There's no country, scarcely, but some of whose inventors have not received financial assistance from him.

Even Colonel Cody, the American turned Britisher, who has done more flying than anyone else in England, has been aided to some extent by Mr. Alexander. Not only in small ways has he been most helpful, but to his efforts have been due the activity among the boys of England, the establishment of an aeronautical laboratory at United Services College, and the founding of several clubs; not to speak of the Aerial League of Great Britain, which is sending lecturers throughout the entire United Kingdom. This missionary work has been inaugurated by the sending of two army officers on lecture tours in India.

Perhaps the most important single encouragement for which he is responsible is his $5,000 motor prize, open to the world, for any kind of a motor, gasoline, compressed air or electric, on the only condition that the competing engine be built in Great Britain, deliver 35 brake horsepower and weigh not more than seven pounds per horsepower. Rules of competition may be had of the Aerial League of the British Empire, Carlton House, Regent St., London, S. W.

Following are the main features of the contest:

The regulations have now been issued governing the Alexander aerial motor competition, a prize of £1,000 being offered for the best 35-horsepower aerial engine of British manufacture. These regulations have been drawn up by the advisory committee for aeronautics, in conjunction with Mr. Patrick Y. Alexander and the representatives of the Aerial League of the British Empire. The tests will be carried out at the National Physical Laboratory under the sole control of the advisory committee. The general regulations are as follows: (1) The machine to be of British manufacture; (2) the motor to be designed to give 35 brake horsepower. The machine will be required to reach this brake horsepower on a preliminary run; (3) the maker to supply a detailed description and drawings, together with a statement of the principal features of the machine. The drawings to show the engine, radiator, tanks, etc., fixed to a known type of aeroplane, so that the length of the connecting pipes can be determined, and impossible combinations for trial purposes guarded against; (4) motors weighing more than 245 pounds—that is, 7 pounds per brake horsepower, will not be admitted for competition. For the purposes of this clause the weight shall be taken to include the weight of the motor itself with crankcase and supporting arms, and all parts necessary for ordinary running, also the cooling apparatus with all accessories. It will not include the supply of cooling water, petrol and lubricating oil, or the containing vessels for these. The main points which will be considered in the comparison of motors admitted for competition will be: Weight and consumption of petrol per brake horsepower; reliability and steadiness of running; wear of working parts; security against fire; air resistance offered by the motor and accessories.

Another School of Aeronautics.

The New York School of Aeronautics has been started by George M. Wright of 132 Nassau St., New York. A shop where students can do real work is being arranged for at the present time. Full-sized machines will be constructed by the students and tried out upon completion on Hempstead Plains. The first machine will be made after the plans of Richard d'Cornejo. Thirty have signified their intention of becoming scholars.

Aeronautical Dictionary

An aeronautical dictionary, containing full information as to the proper nomenclature of aerial apparati, with meanings of all terms in use at the present time relating in any way to the construction or operation of dirigibles, balloons or flying machines, is in course of preparation by the Aeronautic Society.

While the intention in the beginning did not seem to call for a very great outlay of work, the book is already assuming almost monumental proportions, considering the state of the art. It will be the first work of its kind in existence. The editors of the principal newspapers of the country will be supplied with copies, as well as educational institutions and libraries.

At a recent meeting of the Peoria Water Carnival Association it was decided that in connection with the next carnival, which will be held at the time of the regatta, about July 4, to hold in conjunction therewith extensive aeronautic events, with balloon races, etc. Cash prizes will be offered.

Best wishes to a clean magazine, which always says something whenever it speaks.

A. Q. DUFOUR.

William A. Eddy.

With the passing away of William A. Eddy, the science of aeronautics suffers another loss. Although working mostly with kites, Mr. Eddy did a considerable amount of experimental work with hand-launched gliders on a small scale, locating the center of pressure at flying speeds and the arranging of numerous and various shaped surfaces with apparatus launched from kites by time fuses and other means.

Through years of experiment Mr. Eddy's knowledge of kites seemed to come almost from instinct, and almost any shaped surface could be made to fly with a touch or two of his practiced fingers.

He was one of the first to attain success in kite photography, and invented apparatus for this purpose.

An improvement on the old Malay kite was patented, and proved to be of such value that it was purchased for a considerable sum by the E. I. Horsman Co. of New York. Without the advantages of a higher collegiate education, he had the mind and methods of the scientist and the philosopher, and numbered among his acquaintances many of the well-known men prominent in the aeronautic field of to-day.

Leon Delagrange.

Leon Delagrange was born at Orleans, France, 1873. At the age of seven he began taking an interest in sports and had one of the first tricycles built. Then he was entered as a sculptor at the School of Arts, about the same time that Henry Farman went there to take up painting and Gabriel Voisin, architecture. Fifteen years ago he exhibited at the Salon and obtained several medals. It was in 1905 that he first took up aeronautics and assisted at the experiments of Archdeacon at Billancourt on the Seine. Then he had his first aeroplane constructed by Voisin, making his first flight on March 14, 1907, at Issy. On April 11, 1908, he made the then record for distance and duration, 9 minutes 15 seconds, which was double the distance Farman had made until then. Not many flights were made by him during 1908, the best being a little over 30 minutes. For the Rheims meet, in the Fall of 1909, he appeared with a Bleriot machine, which flew until his death. At the Doncaster meet, in England, Leon made a world's speed record of 49.9 miles an hour.

Greene Machine Flying in N. J.

Wilbur R. Kimball, who bought the Dr. Greene biplane, with Frank E. Boland, has been making experimental flights near Rahway, N. J. The tail was entirely removed on one occasion and apparently a successful short flight was made.

COMMERCIAL SIDE OF FLYING

GNOME MOTOR AGENCY.

Seguin & Co., 1610 Wright Building, St. Louis, Mo., have the exclusive agency for Farman aeroplanes and Gnome engines, as well as the Bleriot aeroplane under certain restrictions. Paulhan, who flies at Los Angeles, uses a Gnome motor, and a motor of the same make was used by Farman when he made his four-hour flight, beating world's records for duration and distance. It also holds the height record, made by Paulhan. Eventually, it is expected to manufacture Gnome engines in this country. It is said that $120,000 was spent in developing it before it was thought fit to be placed on the market. The company is pursuing the same policy of carefulness in putting out an aeroplane of their own.

CONOVER AERO CLOTH.

After experimenting the last year and trying the cloth on machines, the C. E. Conover Co., 101 Franklin St., New York, are now bidding for business on the strength of results obtained with their "Naiad" aero cloth. Four different weights and styles are carried, in cotton, linen and silk, ranging from 32 cents to $1.25 a yard, 36 in. wide. The coating of the cloth is moisture proof, air tight and has a smooth surface. This coating is sufficiently elastic to withstand contraction and expansion due to weather conditions.

700 BOSCH MAGNETOS FOR 1910 AEROPLANES.

An illuminating side light on the enormous growth of the aeroplane industry may be gained from the fact that orders for 700 Bosch magnetos for 1910 aeroplanes have already been booked. Of course, these 700 magnetos are not for American use exclusively, but include the orders of French, German and other European aeroplane makers.

GRADE MONOPLANE WANTS AGENCY.

The German Grade aeroplane, which won the $10,000 Lanz prize, and on another occasion made nearly an hour's flight, is being manufactured commercially now, selling at $2,000, $3,000 and $4,000 for one, two and three passengers respectively, and a two-hour flight will be guaranteed.

A short description was given in the January issue. In a subsequent issue we will publish scale drawings and complete details. An agency is to be established in America, if suitable parties can be found to handle it.

BATES AERO MOTOR.

Carl Bates, 104 West Oak St., Chicago, Ill., is having good success from the two types of motors he is putting out, a 30 horsepower and a 50 horsepower. The latter is the same design as the 30, except that the cylinders and general dimensions are larger. The weight is 195 pounds, without accessories, or 245 pounds with radiator, magneto, etc.

The "30" is of the standard four-cylinder upright type, bore and stroke 4 in. by 4 in., delivering 25 to 30 horsepower at "practical speeds," though the motor is said to be capable of running at 2,000. Cooling is by rotary pump and light radiator. Either magneto or high-tension spark coil with distributer is used for ignition. Lubrication is positive pump-fed, constant level, splash system, with oil well beneath crank case. The large valves are located in the cylinder heads, mechanically operated by camshaft in crankcase. The latter is of aluminum alloy, cast in one piece, doing away with all seams. Crankshaft, connecting rods and camshaft are of Krupp chrome nickel steel. Cylinders cast iron with water jackets welded on. Weight complete, with all accessories, is about 155 pounds

Two new models of light motors are being gotten out, so designed that they can be built and sold at a low price. They will be about 25 horsepower, one air and one water cooled, to weigh around 100 pounds. Mr. Bates will accept orders for any special size from 1 to 100 horsepower.

Prompt deliveries are promised on high-grade laminated spruce propellers.

LIVINGSTON RADIATOR CO. CHANGES NAME.

The business heretofore conducted by Edward R. Hewitt and R. C. Gildersleeve under the trade name of Livingston Radiator Co., at 6 East 31st St., New York, will be continued by them at the same address under a new trade name, the "El Arco Radiator Co.," the change being made in order to identify the partners with their new product, the El Arco radiator. This firm claims certain advantages for their new product over the radiator which they have formerly manufactured, and especially for aeroplane work. A number of orders are now on hand for manufacturers of aeroplanes, of motors for aeroplanes and from inventors.

AEROPLANE AGENCY IN CALIFORNIA.

Fowler & Gane, Santa Barbara, Cal., are now western distributers for the Santos-Dumont, Clement-Bayard and Bleriot aeroplanes. Messrs. Fowler & Gane are western agents for the Palmer-Singer and Clement-Bayard automobiles.

CHURCH AEROPLANE CO. ENLARGING.

The Church Aeroplane Co., 15 Myrtle Ave., Brooklyn, N. Y., has taken over the business of the Aeroplane Toy Co. and now has 16 models of flying machines ready for the market. The new company will build full-sized machines to inventors' plans, as well as models and toys.

WARNER INSTRUMENT SPEEDOMETER.

A. P. Warner, in his flights with the Curtiss aeroplane he purchased, states that a direct-reading anemometer, such as the Warner

Instrument Co. is now making, has been of the greatest service to him during his flights. This instrument is attached to the machine, and indicates exactly at any moment the speed of the machine relative to the wind, and knowing what the machine is capable of at various speeds, he does not attempt evolutions that his speed does not warrant. Such a safeguard as this is of importance entirely independent of the distances actually traveled with respect to the ground. By having another anemometer stationary at some point on the ground and observing the force and direction of the wind at this station as well as observing the instrument on the machine itself and the direction of flight, the actual ground covered in the wind can be figured with reasonable accuracy.

NEW LIGHT EISEMANN MAGNETO.

The rapid development of the aeroplane has brought a demand for a special magneto to insure a constant, never-failing spark in the light, powerful and compact motors used to drive their air machines. Lavalette & Co., makers of the Eisemann magneto, have brought out a new magneto built especially for use in aeronautic work, which is lighter than those used in motor cars, though every bit as powerful. Part of the instrument is made of aluminum, and the heaviest model weighs only 16½ pounds, while the lightest of the four-cylinder type weighs but 11 pounds. The company is now in a position to furnish from stock five different styles of this new magneto.

Lavalette & Co. have turned over to the Eisemann Magneto Co. the American rights for the sale of the Eisemann Magneto and the business here will be conducted in the future under the name Eisemann Magneto Co. They have removed to the entire sixth floor of the new Stoddard-Dayton building, 225-227 West 57th street, New York. The company has special facilities for handling aeronautic business.

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"JERSEY SKEETER" TOY.

If Jersey mosquitoes ever get accustomed to the aeroplane, there's no telling what'll happen future generations of New Yorkers. The Lincoln Square Novelty Works, 1931 Broadway, New York, has gotten out a toy aeroplane which they call the "Jersey Skeeter." Its weight is but a sixth of an ounce and can be flown in any room without damage—to the room. Rattan and onion skin paper are used in the framing, which is simple enough. One rattan spar 8 in. long has two aluminum brackets, one each for the propeller shaft and the stationary end of the power plant. Flat aluminum frames with paper in the center make the surfaces. There is a small "V" tail in the rear. The total surface is 18 sq. in., the propeller is 4⅜ in. in diameter, with a 28 degree pitch; the motor, air-cooled, consists of a number 30 rubber band. Weight of aeroplane complete, with motor, 0.0104 pound. Weight per square foot, 0.083 pound. The speed necessary to rise has not been determined. It is nicely gotten up and deserves recognition from the rising generation of birdmen.

REQUA-GIBSON MOTOR TRIED.

The two cylinder "V" 50 horse motor designed by Hugo C. Gibson and built under his patents, as described in the November number, has been completed and given its first trials. The manufacturers state that the dynamometer test showed up 53 h. p. at 1,600 r.p.m., only, while the engine is designed particularly to run at 2,000 or over. Its high speed work is its striking feature. At the conclusion of the automobile shows in New York it will be hooked up to a dynamometer which is capable of registering the full output of work.

The motor is being put on the market by the Requa-Gibson Co., which has taken over the engine patents of Hugo C. Gibson, formerly controlled by the Requa-Coles Co.

NEW ELBRIDGE MOTOR.

Some time ago the Elbridge Engine Co., of Rochester, N. Y., promised to add to their line a special aeronautic motor. They have gone a little further and have brought out three types, of 2, 3 and 4 cylinders, of course, two-cycle. These are of 20, 30 and 40 h. p. and weigh respectively, 100, 135 and 167 pounds. The ratings are very moderate as compared with the usual custom. The largest motor of the three above develops 10 more horsepower than its rated output and has a range of 200 to more than 2,000 r.p.m.

I cannot speak too highly of the excellent manner in which you conduct your paper. John I. Lindholm, 1415½ Broad street, Hartford, Conn.

Dear Sir: Please enter my name on your books for another years' subscription. I find the magazine all that could be desired. It is filled with instructive and enlightening literature. It is a compendium of useful knowledge pertaining to the science of aviation. Wishing you a continuance of success, I am, very truly yours, A. E. Hostelley, Danville, Pa.

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A. Leo Stevens' Cup Won by Dr. Greene for Passenger Carrying

AEROPLANE TYPES

(Continued from page 45.)

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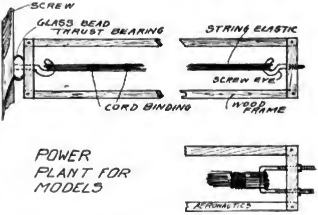
EXCHANGE

PLAN FOR SAVING GAS ON BALLOONS.

Has it been suggested that aeronauts making flights in balloons like that recently from Latonia, in Kentucky, across Lake Erie, might pump the buoyant gas into compression receivers made of aluminum to regulate height or descent without flinging away water bottles and clothing as ballast? To again use the buoyant supply from a stock on hand instead of drawing a waste-valve might be a more economical method.

Or, an anchor of aluminum reinforced by steel by buoyancy of its displacement by dipping in the water of the lake might aid to hold the balloon aloft safely. Other arts use compressed combustible gas.

G. W. Miller,
924 Campbell Ave.,
Hamilton, Ohio.



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MANUFACTURER'S NOTE.

The Snyder & Whitmore Company, 471 Grand avenue, Dayton, Ohio, are building a monoplane for spring try-out, and want to communicate with manufacturers of motors, bamboo, wheels, propellers, chains, steel and aluminum tubing.

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BALLOON ASCENSIONS

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THE ASTERISK (*) DENOTES TRIPS OVER 100 MILES.

LOWELL, Mass., Oct. 16.—H. H. Clayton, pilot, Otto B. Cole and D. M. Pratt, in the "Boston," landing at South Lawrence, Mass. Dist., 8½ miles; dur., 1 hr. 30 min. Alt., 2,500 feet.

LOWELL, Mass., Oct. 28.—J. B. Benton alone in the "Boston," landing at Salem, Mass. Dist., 23 miles; dur., 1 hr.

LOWELL, Mass., Nov. 1.—J. Walter Flagg, pilot, and Jay B. Benton, in the "Boston," landing at Atkinson, N. H. Dist., 38 miles; dur., 50 min. Alt., 3,000 feet.

PHILADELPHIA, Pa., Nov. 8.—Dr. T. Chalmers Fulton, pilot; Dr. Louis A. Salade, Dr. W. E. Hughes, Dr. Geo. C. Stout, Dr. W. W. Babcock and John Kauffman, in the "Ben Franklin," landing at Holmesburg, Pa. Dist., 14 miles; dur., 1 hr. Alt., 3,000 feet. The ascent was made for the purpose of studying the effect of high altitudes on the heart.

*LATONIA, Ky., Nov. 14.—George Howard, pilot; Chas. V. Tevis and J. Campbell Cory, in the "Haddock," to Derby, N. Y. Dist., 385 miles; dur., 10 hrs.

DAYTON, Ohio, Nov. 16.—H. H. McGill, pilot; Edw. M. Burke, Eugene Short and two others, in the "Hoosier," landing near Portsmouth, Ohio. Dist., 94 miles; dur., 3 hrs.

RUTLAND, Vt., Nov. 17.—William Van Sleet, pilot; Ezra Allen and Mrs. Edith I. Sawyer, in the "Heart of the Berkshires," landing at Enfield, N. H. Dist., 42 miles. Snow encountered at 5,000 feet altitude.

ARMY DIRIGIBLE ASCENTS.

OMAHA, Neb., Nov. 24.—Lieutenant Haskell and Sergeant Smith, of the U. S. Signal Corps, in the army dirigible "No. 1," made three ascents of short duration.

ST. LOUIS, Mo., Nov. 27.—A. B. Lambert, pilot; Dwight F. Davis and Robert Allyn, in the "St. Louis No. 3," landing near Bunker Hill, Ill. Dist., 31 miles; dur., 1 hr. 30 min.

RUTLAND, Vt., Nov. 28.—Wm. Van Sleet, pilot. and Jay B. Benton, in the "Mass," to West Lebanon, N. H. Dist., 33 miles; dur., 5½ hrs.; alt., 8,000 feet.

DAYTON, Ohio, Nov. 28.—Dr. P. M. Crume, pilot, from Buck Island in a balloon ot own make of a capacity of but 14,000 cu. ft., landing near Dayton, Ohio. Dist., 7 miles.

Rutland, Nov. 29, 1909. William Van Sleet, pilot, and Jay B. Benton, in the Massachusetts, landing at West Lebanon, N. H.; distance, 35 miles; duration 5 hours, 30 minutes; altitude, 8,000 feet.

Dayton, Dec. 6, 1909. Dr. P. M. Crume, pilot; Judge C. W. Dustin, S. A. Hunter and John Aull in the Hoosier, landing near St. Paris, O.; duration, 3 hours.

St. Louis, Dec. 19, 1909. John Berry, pilot; Miss Nella Webb, an actress, and Miss Julia Hoerner in the Melba II, landing at East St. Louis, Ills.; duration 20 minutes; altitude 2,800 feet. On landing, two other girls were given an ascent.

Leading Patent Attorneys

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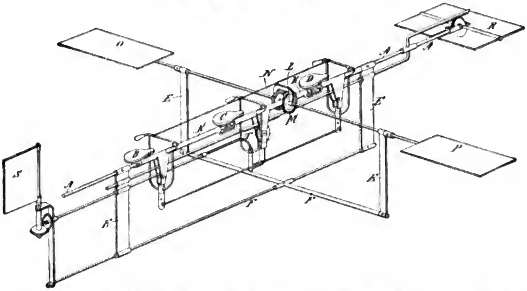
FLYING-MACHINE CONTROL

Invented and Patented by

JAMES MEANS



AA, rod rigidly attached to the frame of the machine. B. C. D. seats rigidly attached to rod A. Each of these seats has a pair of foot-rests (not shown in drawing), rigidly attached to it. EEEEFF. these members are all rigidly attached to the frame of the machine. KK, sleeve revolvable about rod A. L, bevel gear, indicated by dotted line, meshing with gears M and N. Gear L is rigidly attached to sleeve K. T, flexible shaft. O, P, lateral rudders movable simultaneously in opposite directions. R, longitudinal rudder. S, vertical rudder.

The above drawing shows the James Means Control arranged for one, two or three persons. The number of seats and steering handles may be increased as desired. If there is a single aviator he occupies seat C; if there are two they occupy seats B and D, C being vacant.

It is obvious that when the seat C is occupied by a pupil and seats B and D by expert aviators the pupil may receive instruction and at the same time be prevented from making mistakes.

The pupil will profit in a two-fold manner: visually by observing and following the motions of the expert in seat D, also by feeling and following the motions given to the handles by the two experts.

The movements of the several pairs of handle-bars are necessarily similar and simultaneous. The balancing motions of the aviator are natural, that is to say, in actuating the lateral and longitudinal rudders the movement of the handle-bars is in the direction which the swaying of the aviator's body would take if he sought to correct by his weight the rolling or pitching.

In examining the drawing it will be seen that there are three kinds of movement of the handle-bars:

(a) Both hands forward or aft. (b) Both hands right or left, and also, (c) the ordinary bicycle steer which moves the vertical rudder.

These movements may be made either independently or simultaneously.

To illustrate the former:

Both hands aft elevates bow.

Both hands forward depresses bow.

Both hands to the right elevates port side.

Both hands to the left elevates starboard side.

When it is desired to move all the rudders simultaneously the number of possible combinations is infinite.

It will be noticed that the swaying movement of the upper part of the body assists the rudders by favorably changing the centre of gravity of the whole.

It is also obvious that if several persons fly in one machine by this method they are not carried as dead weight, but are moving harmoniously according to the requirements of equilibrium and they are in position to offer the least possible air-resistance.

This invention is patented in the United States. Patents are pending in foreign countries. For information concerning licenses to manufacture, please address

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AERONAUTICS

THE AMERICAN MAGAZINE
OF AERIAL LOCOMOTION

VOL. 6
NO. 3.

MARCH, 1910

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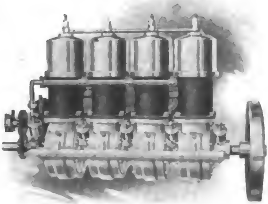

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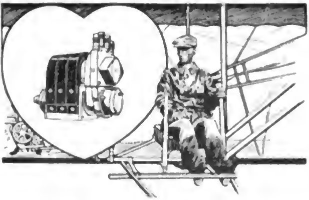

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AERONAUTICS

THE CENTRE OF PRESSURE ON ARCHED SURFACES

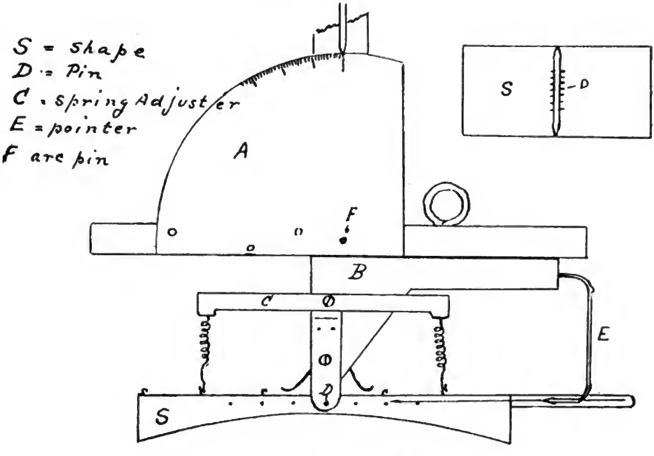
By Matthew B. Sellers.

READ BEFORE THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THESE experiments to determine the centre of pressure on some arched surfaces when exposed at various angles to a current of air were made in November, 1906, with the Wind Tunnel, described in Scientific American Supp., Nov. 14, 1908, but have not heretofore been made public.

At first, a device similar to that employed by Prof. Langley was tried; but it was impossible to get correct readings, owing to oscillation or flouncing of the surfaces tested. and the proximity of even a slender rod used in an attempt to steady them vitiated the results. I therefore made the device shown in Fig. 1, which may be briefly described as follows:

Fig. 1



Centre of Pressure Balance

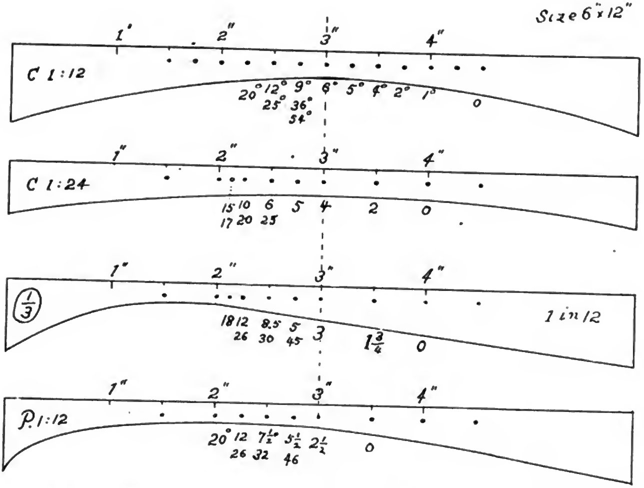
Attached to the surface to be tested, which I shall call a shape, is a bar extending centrally fore and aft. On this are pins suitably located, for pivoting the shape. A support carries bearings, which may be sprung over the desired pin; and this support can be tipped in a vertical plane, and has a graduated arc which shows the amount of inclination.

The shape is held balanced by adjustable springs in a position in agreement with the zero of the arc; and its departure from this position is restrained by the springs, and limited by suitable stops.

A pointer affixed to the support shows when the shape is in this position.

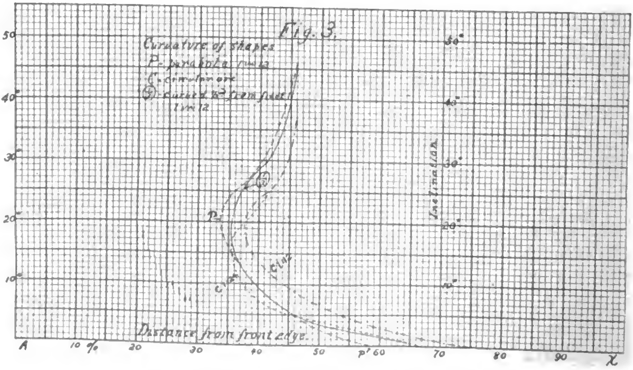
In making a test, the shape is pivoted on the desired pin; and, after turning the support to approximately the proper angle (found by previous trial), the springs are adjusted in still air, so as to balance the shape and bring the pointer to zero. Then the air current is started, and readings taken (with tunnel window closed), till the pointer shows no deviation; and the degree of inclination read off from the graduated arc.

Fig. 2



Inclination Corresponding to Centres of Pressure

Fig. 3.



The shapes, shown in Fig. 2, are 6 in. by 12 in. Two have the curvature of a circular arc, with depth respectively of ½ in. and ¼ in. (= 1 in 12 and 1 in 24). The one marked (1/3) is curved for the front third, and flat for the rest of its width having a curvature of 1 in 12. The one marked "P" is the half vertex of a parabola also 1 in 12. In this figure (Fig. 2) the pins used are shown by dots; and, below each pin is shown the degree of inclination required to bring the centre of pressure to that point. The distance in inches from the front of the shape is laid off above it. The changes in position of the centre of pressure are graphically shown in Fig. 3, where the line AX represents the length of the shape, and the abscissas of the curves show the distances in per cent. from the front of the shape; the ordinates show the corresponding degree of inclination. Table 4 gives these data. It is seen that, in these curves the centre of pressure corresponding to Zero inclination is about two-thirds of the width of the shape from the front; and that it moves forward with an increase of inclination, till it reaches a point one-third from the front, and an angle of from 16 to 20 deg., where it begins to move slowly backward and is near the centre at 45 deg. This movement of the centre of pressure, is least in the parabolic curve, and greatest in the circular arc. If we decrease the depth of curvature the centre of pressure for all angles moves forward; and the angle at which reversal takes place is also lessened. It has been found that changing the relative dimensions of a shape, changes the relation of inclination to centre of pressure.

It has been stated repeatedly that, for the same angle, the c. of p. moves forward with an increase of air velocity; this may be so; but I have had no positive proof of it, and see no reason why it should be so. I have intended to continue these experiments with other shapes, and varying air velocity; but other more urgent work has prevented my doing so. The air velocity used was 1,400 ft. per minute.

FIG. 4.

CENTRE OF PRESSURE.

Distance from front edge. Nearest per cent.

Angles	C 1 in 12	C 1 in 24	(1/3) 1 in 12	P 1 in 12
0	75	67	67	59
1	68	62	62	55
2	63	58	57	51
3	60	54	52	49
4	57	50	48	47
5	54	46	46	46
6	51	42	44	44
7	49	40	43	43
8	47	39	42	42
9	46	38	41	41
10	44	37	40	40
15	39	35	36	35
20	38	38	36	33
25	42	42	37	36
30	45	45	41	40
40	46	46	45	44

MODEL FLYING THE NEW SPORT

West Side Y. M. C. A. Continues Flights.

New York, Feb. 14.—The West Side Y. M. C. A. is continuing its aero courses and model competitions with increasing success. Nearly every Saturday a hundred to a hundred and fifty gather at the Armory at Broadway and 68th Street to fly their models.

On Jan. 8th was started the contest for the "Automobilia" cup. Dr. Dederer won all three legs, getting the cup. His longest flight was 189 ft. 8 in. on Jan. 22. He won the contest of the following week as well.

SIDNEY BOWMAN OFFERS CUP.

On February 1st Sidney B. Bowman, American agent for Santos-Dumont aeroplanes and Clement-Bayard airships, offered a cup of the value of $100 for the best constructed model made during 1910, which must win one of the Y. M. C. A. contests in order to be eligible. The Leo Stevens cup is another of $100 value, making two now under control of the association. From time to time smaller cups will be offered.

The next contest was on February 5th when W. Morrill Sage won with a Wright model, 107 ft. 9 in. No more contests will be held until March 5th, as many of the models will be shown in the meantime at the Newark and Boston shows.

NEW CLASS STARTED.

A men's class has just started, under the direction of Mr. Kimball, and is very successful. One of the enrollments comes from Mexico. Last week was started a boys' class in model making.

Chanute Challenge Cup for Models

Rules are being sent out by the Aeronautic Society for an international model competition for the Octave Chanute Cup. Three teams from any club can compete or individuals may get together and form teams. This cup will be for perpetual competition. The society will hold elimination trials at the 69th Regiment Armory on March 3 in order to determine its three teams to defend the cup. For particulars address the secretary, 1999 Broadway, New York.

THE LOS ANGELES AERO MEET

By Professor H. La V. Twining.

PRESIDENT AERO CLUB OF CALIFORNIA.

THE midwinter international aero meet occurring in Los Angeles, Cal., Jan. 10 to 20, 1910, was sanctioned by the Aero Club of America and was held under the auspices of the Aero Club of California.

This great undertaking was financed by prominent citizens of Los Angeles, under the leadership of the Merchants and Manufacturers Association. A committee, appointed by this organization, managed the whole undertaking, while a committee of Judges appointed by the Aero Club of California took charge of the contests and scientific features of the meet. From a financial and sporting standpoint, it was a great success, and it demonstrated the adaptability of Los Angeles and vicinity to midwinter ballooning and aeroplaning.

Eighteen balloon ascensions were made, which was a remarkable thing in itself, but owing to the newness of the aeroplanes and the intense interest in the latter, the balloons did not attract the attention that they deserved. Furthermore, the balloon grounds were not located at Dominguez Junction, where the aeroplane flights took place; and this, added to the fact that the balloon flights took place in the morning, divided the interest.

On some days the attendance reached as high as 40,000 to 50,000 persons, and on no day did the attendance fall as low as 20,000. The track was located on a field near Dominguez Junction. It was 1.61 miles in circumference and somwhat elliptical in shape. The grandstand was situated on one side of the ellipse, facing a broad valley toward the city of Los Angeles. This grandstand had a seating capacity of 20,000 persons. Here, on historic ground, world's records were broken, and cross-country flights were undertaken that demonstrated beyond the question of a doubt the practicability of the aeroplane.

Cortlandt Field Bishop, the president of the Aero Club of America, came from New York to observe the flights, on the part of the parent club. His presence contributed largely to the sporting success of the meet, and his friendly attitude and quick perception of the conditions and present difficulties of the situation made a strong and favorable impression

The star of the meet was Louis Paulhan, with his Farman machine. His unbounded confidence in the flying qualities of his machine was shown in every move and act. He displayed no nervousness at any time, and was ready to fly even in gusty weather. The ease with which he rode the white winged monster conveyed an idea of power, and the confidence with which he undertook cross-country flights gave an impression of stab and practicability that no other performanc could give.

Skeptical men came and were convinced. Paulhan's flight into the upper air 4,165 ft above the aviation field was not only spectacular, but it was also a practical demonstration of the fact that the aeroplane is no toy. It had an air of success, of solidity and certainty that impressed all beholders.

Less spectacular but no less practical, were the flights of Curtiss on his speedy flyer. The ease with which his machine left the ground, its speed in the air and the grace with which it took the turns added to the general impression of success, to the certainty that the flying machine had come, that the dream of ages had been realized.

The work of Hamilton and Willard added to the general impression of certainty and success. With less powerful motors these two operators of Curtiss machines demonstrated what could be done with small surface and small power. Using only 25 h. p. instead of 50 to 60 and having a surface much smaller than the Farman, they were able to fly with certainty and ease. Willard left the ground in a 20-ft. square after a short run, and after making the circuit of the field, alighted in the same square, making a remarkable exhibition of skill.

Hamilton made a cross-country flight to Gardena and return, after having risen 755 ft into the air, being in the air 25 minutes and 30 seconds.

At San Diego, on January 25, Hamilton made a cross-country flight of greater extent. The president of the Aero Club of California was designated by Cortlandt Field Bishop to officially observe the flights of Mr. Hamilton. He had the 8-cylinder machine used by Curtiss at Los Angeles and intended to try for the world's record in height, but owing to the weather he did not make the attemp

On Monday, Jan 24, however, everything having been previously arranged, he made a cross-country flight into Mexico. At 4:45 in the afternoon he left the ground in a 10 to 15-mile wind and headed south along the beach on Coronado Island. He crossed the channel to the mainland, and proceeded along the beach to Point of Rocks, crossed the line into Mexico. Automobiles were stationed along the route, and they followed and observed his flight. After crossing the line, he turned out to sea and, facing north, he came back by the same route, being in the air just 40 minutes, and covering a distance of about 36 miles.

The local inventors were on hand with a half dozen machines, but none of them succeeded in flying, owing to lack of powerful enough motors.

Some half a dozen other machines were ready, but for the same reasons they did not enter.

FOUR NEW WORLD RECORDS — PAULHAN DOUBLES OLD HEIGHT FIGURE — CROSS COUNTRY RECORD NEARLY BEATEN

By Cleve T. Shaffer.

SUCCESS, from an exhibition standpoint, can be written for the Los Angeles "meet," Jan. 10-20. From the standpoint of a series of competitions like Rheims, it was a failure. Only three types of aeroplanes flew, the Farman, Bleriot and Curtiss; the dirigibles came out every day, but aroused little interest; and the balloon prizes were called off, owing to lack of entries and interest. The balloons made short ascents over the city.

Sanction was given by the Aero Club of America through the Aero Club of California. Credit for the conception of the show must be given to W. H. Leonard, the sporting editor of the Los Angeles *Times;* Prof. H. La V. Twining, president of the Aero Club of California; "Dick" Ferris, who acted as manager, and George B. Harrison, formerly of the Los Angeles *Herald*.

Three tents housed all the machines. The Frenchmen were in one, the local machines in the second and the Curtiss crowd in the other. Back of the grand stand is a deep gulley, in which the dirigible tents were located. The grounds are on a side hill, sloping two ways of the field, with a difference of 90 ft. in elevation, end to end.

The aviators were guaranteed certain sums for their flights, and they signed releases for any prizes which they might "win" over and above the amount of the guarantees. This was the same arrangement as was made at Brescia.

The government dirigible, although present, did not take part. It sustained some accident in shipment and trouble was had in making the gas.

Weather conditions were good most of the "week." Paulhan had two Farmans and two Bleriots; Curtiss brought the 8-cylinder Rheims and two regular types, one for Clifford B. Harmon and one for Frank Johnson, the California agent for Curtiss machines; Charles K. Hamilton had a Curtiss and Charles F. Willard had the Aeronautic Society's machine, the first one built by Curtiss; Hill Beachy brought the Gill-Dosch machine of Baltimore, an exact copy of the Curtiss, but with an American-British automobile motor of 180 pounds weight for 26 horsepower.

(Continued on page 104)

THE PFITZNER MONOPLANE

IN THE February number we printed the first photographs of the monoplane designed and built by A. L. Pfitzner at the Curtiss factory at Hammondsport. In this issue is found a full set of plans and specifications, with a detailed description.

Three short flights of 300 ft. to 400 ft. were made but the machine was damaged each time on the rough ground. Mr. Pfitzner is now waiting for Lake Keuka to freeze over so he can make his experiments on the ice.

Main Supporting Surface.—Each wing is made in three sections, each 5 ft. long. These are attached and connected by sheet steel sockets and steel cable, the cables forming a symmetrical double King truss with the beams, with King posts at the junction of the detachable sections. The cables fasten to drill rod hooks, which are designed for quick replacement and adjustment. Bicycle spoke nipples and eyes are used for tightening the cables. The two wings are set at a dihedral angle of 5 deg. They are formed by two beams, the front beam serving as cutting edge, while the rear beam is 10 in. from the cable rear edge of the surface. These beams carry ribs of the same shape as those in the middle main section, the ribs between the King posts being trussed by an inverted rib and drill rod ties. All sockets are made of tempered sheet steel. The surface is single with the framework exposed, and all on the under side and is made of Captain T. S. Baldwin's vulcanized Japanese silk proof material produced by an improved process jet black, according to the wishes of the designer, by the Hodgman Rubber Company, of Tuckahoe, N. Y.

The material is stretched over the ribs by lacing to the ribs at the junction of each of the seven sections, and is held to the ribs by featherbone and tacks.

The main surface discontinues 30 in. from the end of each wing, this space being left open between the front and rear beam to accommodate the "equalizer."

Between the front main posts, 46 in. from the ground, is the main lateral beam, i. e., the cutting edge of the surface. The rear edge of the surface is 10⅛ in. lower between the rear main posts and is steel cable. The curvature of the surface is of the high speed flat type, the center of pressure being 18 in. from the cutting edge and the highest part of the surface only 1½ in. above the cutting edge. The ribs have 3¼ in. camber in 6 ft. length. The angle of incidence is 8 deg.

The rear lateral beam is 10 in. from the rear edge, under the surface, resting in sheet steel sockets under the heavy main ribs, which connect the main posts near at their center. The top of these posts is connected in the fore and aft direction by seamless steel tubes, which also furnish support for two torpedo shaped gasoline tanks, their form being designed to give the least amount of skin friction.

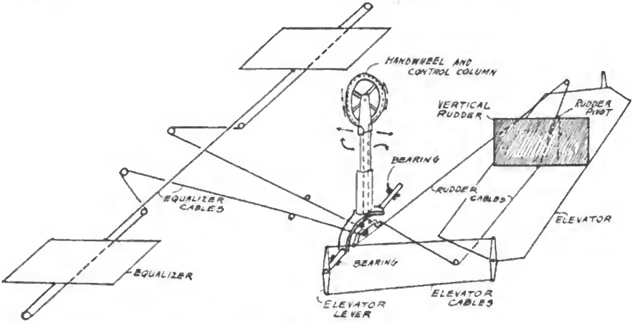
The "Equalizers."—The equalizers, 30 in. wide by 5 ft. deep, are of the same curvature as the main surface, formed by three ribs which end against a beam both in front and rear, held together by sheet steel sockets. These surfaces, covered on top and bottom, are supported by eye-members of the end sockets by tool steel tube rails on the inside and in line with the beams, the rails extending the whole length of the last section, i. e., 5 ft., both under the main surface and through the left open space of 30 in., giving 30 in. travel to the 30-in. wide equalizers. The neutral position of these equalizers is 15 in. beyond the main surface and 15 in. from the end of the machine. On the inside the equalizers are connected by cable, to make one follow the other, while on the outside at the middle towards the extremities of the machine the opposite ends of a long cable are attached to each equalizer, same cable guided by several pulleys is wound around the control wheel in such a way that in turning the wheel to the right the left equalizer is pulled out from its neutral position towards the end of the machine, increasing the surface on that side of the machine and so lifting said ends while the right equalizer is compelled by the interconnecting inside wire to follow the other equalizer and so is pulled from its neutral position toward the center and nuder the main surface decreasing the lifting area on that end of the machine and so permitting the machine to sink at that end. and vice versa. The area of each equalizer being 12½ sq. ft. the possible difference in the balance of the machine can be 50 pounds at 40 miles per hour. at which speed the surface is figured to lift 4 pounds per sq. ft.

Rudders.—At the middle of the front and rear main posts are brackets to hold the elevator and stabilizer trusswork, made in two sections of the same King truss design as the wings. Fourteen feet from the cutting edge of the main surface is the cutting edge of the elevator, which consists of a main beam, the ends of same acting as trunnions in the bearing of the supporting truss. Upon this beam are the ribs, which in the front carry a light beam, to give a positive cutting edge. and are in the rear connected by steel cable. similar to the main surfaces, the ribs being so divided by the beam in fore and aft direction that the elevator surface is balanced in itself The elevator carries on the right end a double lever, which is connected by adjustable cables to the elevator levers of the controlling column.

At the middle of the elevator beam is a socket to carry the rudder pole around which turns the balanced vertical rudder above the elevator, operated by cables, which come from the rudder levers of the controlling column and wheel.

Ten feet from the rear edge of the main surface is the rear edge of the stabilizer, which is set at a predetermined angle of incidence and is rigidly held in the end bearings of the supporting truss, which is of similar design as the elevator supporting truss. The stabilizer is of the same design as the elevator with the exception that the cutting edge is steel cable instead of wood.

Controls.—So far, steering and stabilizing motions have been controlled by the combination of independent levers, wheel and shoulder braces, swaying of the aviator's body, wires attached to the coat or headgear of the aviator, pedals, etc. The Pfitzner movement unites these three motions in a natural way in the hands of the aviator by a wheel on a controlling column.



Pfitzner System of Control

Steering up and down is controlled by pulling the wheel towards the body of the aviator, or pushing it away from it, which is based on a natural tendency to lean back if it is desired to go up and lean forward when descending seems advisable. For this purpose the controlling column is supported by two trunnions which revolve in bearings, same being bolted to the seat beams. On the right hand side the trunnion is extended beyond the bearing and carries the elevator lever, i. e., the double lever which transmits by cables the motion of the controlling column to the elevator.

Steering to right and left is performed by pulling the side of the wheel towards which it is desired to turn to the body and pushing the other side out. This is the regular handlebar motion, by which all bicycles and motorcycles are steered, and is natural and accustomed. To permit this, the shaft of the controlling column, rotates in a 4-in. long bearing of the supporting bracket. Against the bottom of this bearing bears the steering lever, the ends of which are connected by cables to the rudder. In order that the length of these cables should remain the same during the elevating motion, the controlling column bracket is arched permitting the ends of the steering lever to be in the center line of motion.

The raising and lowering respectively of the opposite lateral extremities of the machine is arrived at by turning the wheel, which stands vertical and in front of the aviator, to the side which should be lowered. This motion is quite natural and almost automatically performed by the aviator, as our senses of stability sideways are very keen.

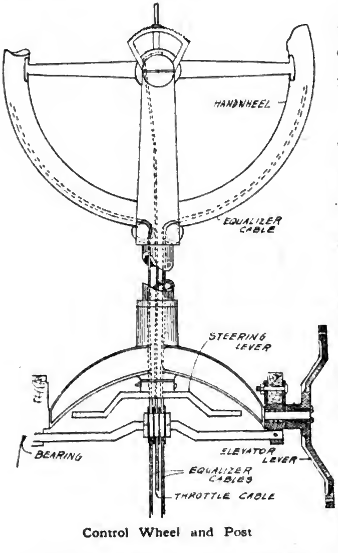
To transmit the motion of the wheel to the equalizers, a cable is wound around the circumference of the grooved wheel, same cable lead by pulleys through the hollow shaft of the controlling column leaves the pulleys in the center line of motion (so that its tension is in no way affected by the formerly described controlling motions) and is fastened at its opposite ends to the outside rib of the equalizers.

The controlling column carries on the side of the aviator a lever by which the throttle of the motor is controlled, and throttle lever cable being led also through the hollow shaft guided by pulleys on its path to the carburetor.

The wheel is equipped by a switch button on one of the spokes in convenient reach of the right hand fingers to cut out the ignition and so stop the motor.

The controlling column is in the second section of the elevator supporting truss carried by the two seat beams, which are held by the main front beam truss and the elevator truss cross beams in such a way, that the seat of the aviator is 10 in. below, and just in front of the cutting edge of the main surface in the longitudinal center line of the machine. The controlling column is also in this center line in front of the seat, fastened to the under side of the beams.

Power Plant.—The main surface is pierced by the motor bed, which consists of two laminated beams, upon which slightly behind the center of the machine is mounted the honeycomb type Livingston radiator, and in the rear the 25 h. p. 4-stroke, 4-cycle, water-cooled Curtiss motor, upon the shaft of which is directly mounted the A type Pfitzner laminated spruce propeller of 6 ft. diameter, 4½ ft. pitch, giving 235 pounds thrust at 1,200 r.p.m., i. e., 9.4 pounds thrust per h. p. The propeller weighs but 6¾ pounds.



Control Wheel and Post

The oil tank is below the surface supported from the motor bed and the motor bed truss.

A water jacketed "A-1" type Stromberg carburetor is used. The ignition is supplied by a "DU-4" type Bosch high tension magneto, which is regular equipment with the Curtiss motors.

Running Gear.—The main part, the chassis of the machine consists of four vertical posts, which end at the bottom in forks made of seamless steel tubing, each holding a 20-in. diameter pneumatic tired wheel. These four posts and wheels are spaced by seamless steel tubing trusses and wooden skids forming the base of the monoplane. Brakes are fitted to the rear wheels, operated by wires and a lever on the left side of the aviator's seat.

Other Details.—The machine is balanced in the center line of thrust and in the center line of pressure. This means that the center line of resistance coincides with the center line of thrust and the center line of gravity goes through the center of pressure at the normal angle of incidence, which is 8 deg. This requirement determined the location of the motor and aviator. All the woodwork is made of spruce. Beams and posts are solid and the 26 ribs are laminated in the usual way. The whole machine is finished black with the exception of the steel cables, motor and radiator.

Area main surface, 186 sq. ft.; two equalizers, 25 sq. ft.; elevator, 17 sq. ft.; stabilizer, 10½ sq. ft.; rudder, 6 sq. ft. Weight of the complete machine, with 6 gallons of gasoline, 1½ gallons of water and 1 gallon of oil, 430 pounds.

CONTRASTED WITH FRENCH MONOPLANES.

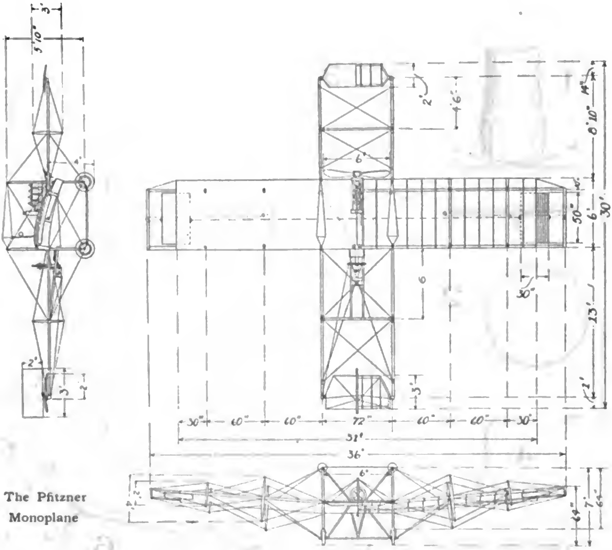
The general outlines of the machine resting on four wheels are already widely different from any other monoplane. The second most noticeable departure is, that the aviator sits in front of the surface while the motor and propeller are in the rear. All the moving controls that are on the French machines in the rear, are here in front of the aviator, the surface in the rear being a rigid stabilizer.

All kinds of control levers, pedals and braces are missing and are substituted by one mechanical controlling column. The lateral stability, which has been a troublesome point in the design in most machines, is taken care of by a new, simple device, sliding surfaces, applied the first time to any aeroplane.

The supporting surface is single, on this machine, against the double surface of the French machines and the trussing is perfectly open, while it is enclosed between the surfaces in the foreign monoplanes.

REASONS FOR THE DESIGN.

The 4-wheeled chassis is an outcome of the designer's past experience with automobiles, which travel fast on all kinds of roads and is possible by the balance of the machine, giving ample road clearance for starting in all directions. The aviator's location in front was chosen for sake of personal comfort and safety. Anyone who has stood behind a propeller for a few minutes, when it is giving 200 pounds push, knows that it is not the right position to be in for any length of time. Besides, in case of accident the aviator as a rule falls forward, and it is more dangerous to fall into the motor and propeller than on the ground. It is a natural desire to see the controlling parts while one is in the air, and it is safer to be able to observe their behavior under the great strain than to be ignorant of changes that might occur with them; this is the reason for placing elevator and rudder in front.



The Pfitzner Monoplane

The single surface is lighter and more efficient than the double and the open ribs on the bottom act as braces against the air on the curves, reducing the tendency to slide down sideways.

The reason for choosing an open trussing is obvious. Every part of the machine can be carefully inspected and adjusted any time in a few minutes, as everything is absolutely accessible. Yet the main reason for designing an altogether original machine was to create a new, American type of monoplane and to encourage the building of aeroplanes by proving that it is not necessary to copy anyone, to produce a successful flyer.

Claude Zellers is rebuilding the W. J. Smith dirigible in the shops of John Berry, St. Louis. Trials are planned for spring.

Hugh L. Willoughby is getting the parts together for a second machine, to be of but 500 pounds weight.

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12 MILES UP.

W. H. Dines has sent up some small registering balloons from Argyllshire, of which two reached a height of 12.5 miles. At 7 miles up one recorded 60 deg. F., while another gave 90 deg. F.

Moore-Brabazon has flown cross-country from the Shellbeach to the Eastchurch grounds of the Aero Club, about 4½ miles, in his Short biplane.

L. R. Peterkin, the organizer of the Wright Company, was a passenger in Hon. C. S. Roll's Wright machine at Eastchurch.

The missionary work of the British Aerial League is progressing rapidly in India, where a branch of the League has been formed.

Aviation Calendar for 1910.

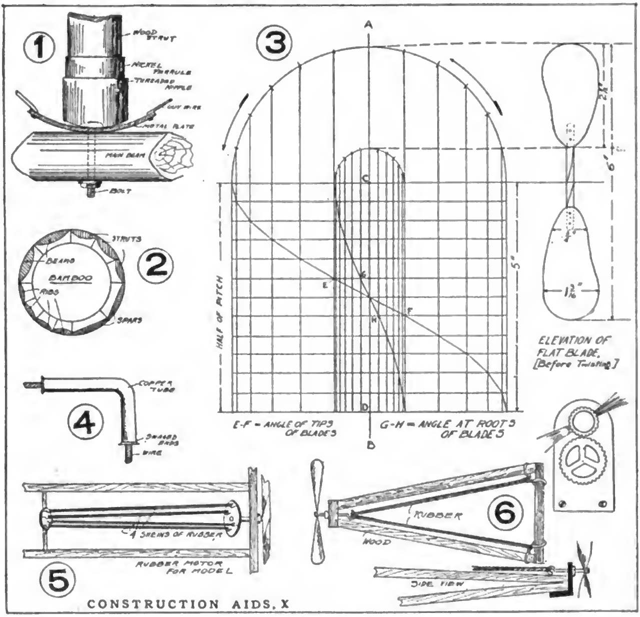
The F. A. I. has established the following international meetings for 1910. Other meetings not of such character may also be held.

May 20-30	Nice	$50,000
April 10-25	Berlin	.....
May 10-16	Italy	42,000
June 5	Budapest	120,000
June 18-24	St. Petersburg	.....
June 28-July 10	Rheims	40,000
July 11-16	England	.....
July 14-24	French Auto Clubs	40,000
July 24-Aug. 4	Belgium	40,000
Aug. 6-13	England	.....
Aug. 7-21	A circuit organized by the "Matin"	20,000
Aug. 25-Sept. 4	Deauville	48,000
Sept. 8-18	Bordeaux	40,000
Sept. 24-Oct. 3	Milan	.....
Oct. 18-Nov. 2	America.	

[Oct. 18-25 for Gordon-Bennett balloon race; Oct. 26-Nov. 2 for Gordon Bennett aviation meet.]

Nine other smaller meetings are set for Cannes, Tours, Bordeaux, Lyons, Vichy, Juvisy, Caen, Biarritz.

CONSTRUCTION AIDS, X



CONSTRUCTION AIDS, X

In Fig. 1 is illustrated a strut joint used by Dr. Wm. Greene. It is composed of a nickel-plated brass ferrule, threaded. A sleeve is bolted to the main lateral beam. To release a strut, the nut is loosened, enabling the sleeve to turn the ferrule out.

Fig. 2 shows how a piece of bamboo may be utilized for models. The best part is the tough wood just below the smooth surface.

Farman uses no pulleys for conducting his steering wires around corners. Fig. 4 illustrates his method.

For model or big work a good scheme for laying out a propeller is shown in Fig. 3. In a model in which this scheme was employed a 6-inch diameter propeller of 10-inch pitch was made. With two strands of 1/8-inch square rubber, 18 inches in length, at 200 revolutions a thrust of .75 oz. was obtained.

Draw a center line A-B and measure off on this half the pitch, C-D, which in this case would make it 5 inches. With a radius equal to half the diameter of the propeller draw a semicircle and then complete the parallelogram. Divide the vertical sides of the parallelogram into a number of equal parts, say 12. Connect these with parallel lines. Next divide the circumference of the semicircle into the same number of equal parts and project lines downward crossing the horizontal lines at right angles. A line drawn through these intersections as shown will give the path of the blade tip through half a revolution. E-F will be the angle necessary to give the tip of the blade in order for it to travel the pitch distance, i. e., 10 inches. Repeating the latter half of the drawing will give the angle at the base of the blade, G-H. The propeller blades were made of aluminum, twisted to the above angles.

Figures 5 and 6 illustrate some ideas for model making.

FIRST AMERICAN CONVENTION OF AERO CLUBS

By E. Percy Noel.

FOR the first time in the American history of aeronautics a convention which represented fourteen aero clubs met in St. Louis, January 29, at the invitation of the Aero Club of St. Louis and the call of Cortland Field Bishop, president of the Aero Club of America. It was the unanimous opinion of the clubs outside of New York that the Aero Club of America should appoint a national aero commission to regulate aeronautic events in this country, which will take the supreme national control from the Aero Club of America and place it in a body representative of all the clubs.

Although the convention was in session for scarcely three hours, much was accomplished which it is believed will benefit aeronautics from a sportive, practical and scientific standpoint, through motions carried and resolutions adopted. The spirit of good sportsmanship and fairness was the keynote of the convention.

Practically every club representative present applied to Mr. Bishop for the international aviation meet, or the international balloon race, or both; but nearly all appeared too willing to hold a minor event in case the international aeroplanes, or balloon race should not be available. That all the aeroplane meets and other aeronautic events to be held this year will be under the direct management of the local clubs concerned is now determined, which will prevent the hippodrome side of aeroplaning from becoming important, the meetings to be, nominally at least, of a sportive character.

A racing committee was appointed, consisting of Carl G. Fisher, chairman, Aero Club of Indiana; A. B. Lambert, Aero Club of St. Louis; and Alan R. Hawley, Aero Club of America. This committee will arrange a racing program for 1910 in America, to include all aeronautic meetings that will be sanctioned by the Aero Club of America, or the national aero commission. In order to obtain recognition by this committee, aero clubs are required to name their prospective dates for aeroplane or balloon races before March 1. Clubs which do not give notice by that time will have to take the chance of a sanction being refused. This committee is to obviate conflicting dates, as was recently done by a commission of the International Aeronautic Federation abroad.

The appointment of a national aero commission will be accomplished by a revision in the charter of the Aero Club of America which will call for two representatives from affiliated clubs, but the privileges of this commission are outlined. The Aero Club of America's plans are far too narrow to suit the other clubs. It is the intention of the Aero Club of America to affiliate all incorporated aero clubs that apply for such representation in national aeronautics, it being understood that not more than one club will be accepted from the same city.

The Aero Club of America will announce the name of the club to whom the international aeroplane meeting is to be given about February 20. As everyone knows, if New York is not the city to be selected Washington and Baltimore are.

Mr. Bishop declared himself unequivocally in favor of St. Louis for the international balloon race, saying that the Mississippi valley was unexcelled in the world for ballooning. There is little doubt that St. Louis can secure this race. The Aero Club decided several months ago to endeavor to obtain this event.

Although each delegate to the convention was anxious to secure the international aeroplane meet, with the single exception of Rochester, N. Y., there was an evidence of hopelessness on the part of several. It was said that there was little possibility of the meet being held elsewhere than at Washington, where Bennings race track can be enlarged to give an aviation field some five miles in length by an average of one and one-half miles in width. Other reports have it that New York will be the scene of the meeting.

Two resolutions were adopted to be be presented to President Taft and Congress, which are designed to spur the Government to greater activity in aeronautics. One of these provides for the determination of the value of aerial craft in warfare and the other for steps to insure development in the science of aeronautics. The first was presented by Jerome S. Fanciulli, for the Aero Club of Washington, and the second by A. B. Lambert, for St. Louis.

UPHOLDS EFFICIENCY IN WAR.

Mr. Lambert's resolution reads: "As it is the opinion of the aero clubs now meeting that the United States Government is not progressing or undertaking steps to insure development consistent with that of other nations in the science of aeronautics, and that this is most important to our government; be it resolved, that the president of the Aero Club of America appoint a committee of three, to be selected from the affiliated aero clubs, to incorporate the sense of this resolution in an address, the same to be presented to the president of the United States."

Mr. Fanciulli's resolution stated that "recent experiments demonstrated the practicability of dropping weights from air craft upon a given target, and the practicability of aerial craft for scouting purposes." It was resolved, in view of this and other facts, that "Congress be requested to determine the value of aerial craft in warfare," and, further, "that copies of this resolution be sent to the aero clubs of the United States, with the request that they endeavor to impress the men of Congress with the importance of the object of this resolution."

The convention was called to order at 3:30 p. m. in the main floor library of the Jefferson Hotel, Mr. Bishop in the chair. A motion made by Mr. Lambert was carried that the conference should be open not only to affiliated clubs, but also to all clubs represented. Mr. Bishop at once recognized three applicants for affiliation with the Aero Club of America, in the Kansas City Aero Club, the Aero Club of Dayton and the Aero Club of Rochester, all of which have recently been incorporated.

DELEGATES GET FLOOR IN TURN.

Each delegate was given the floor in turn and permitted to set forth his views and demands for the club he represented. A greater number of clubs than had been expected was represented, the Aero Club of St. Louis by Mr. Lambert, the Aero Club of America, the Aero Club of New England, the Aero Club of California, and the Aero Club of Denver, by Mr. Bishop; the Aero Club of Washington and the Aero Club of Baltimore by Mr. Fanciulli; the Aero Club of Dayton, by S. T. Hunter; the Aero Club of Rochester, by L. J. Seeley; the Aero Club of Des Moines, by Lafayette Young, Jr.; the Air Craft Club of Peoria, by F. W. Arnold; the Aero Club, of Kansas City, by George W. Meyers and the Aero Club of Indiana, by Carl G. Fisher.

Others present from out-of-town clubs were: J. D. Havers, W. B. Strong, S. B. Duke, L. W. Shouse and H. F. Lang of Kansas City, F. C. Hubbell and A. D. Peters of Des Moines.

L. J. Seeley asked for the next convention of clubs at Rochester, N. Y., but no action was taken. A plan was formulated for the translation of the International Aeronautic Federation rules from French into English, so that all clubs might be provided with a copy. Fisher offered $50,000 cash and a percentage of the gate receipts for the international aeroplane meet at the Indianapolis motor speedway. Myers asked for both balloon and aviation events in Kansas City, saying that from that point the greatest distance was possible in a balloon. Arnold asked for an aviation meet at Peoria July 4, 5 or 6, guaranteeing sufficient money.

At the luncheon which preceded the convention, Daniel C. Nugent, acting president of the St. Louis Aero Club, presiding, Mr. Bishop was first called upon. He spoke eloquently of the joys of air travel.

BOSTON AERO SHOW-FEBRUARY 16-23

Owing to the widespread interest now being taken in aerial navigation, it has been decided to afford the people of New England an opportunity of seeing just how far the art has progressed. Gigantic strides have been made in the past year, but the general public have had no way of realizing what degree of success has been obtained through the newspapers. The opportunity of viewing all the different types of wonderful air-craft will be afforded the public February 16-23, when the "First National Exhibition of Aerial Craft" will be held in Mechanics Building, Boston, under the personal direction of Chester I. Campbell and sanctioned by the Aero Club of New England and the Aero Club of America.

Charles J. Glidden is Chairman of the Advisory Board for the Exhibition, and such well-known men as Prof. W. H. Pickering of Harvard University, Prof. David Todd of Amherst College, H. Helm Clayton, Luke J. Minahan, president of the Pittsfield Aero Club; N. H. Arnold of North Adams, Chas. J. Shean, president of the Springfield Aero Club; A. Holland Forbes, vice-president of the Aero Club of America; Prof. A. Lawrence Rotch of Boston, Hon. John Barrett of the Aero Club of Washington, D. C., and A. B. Lambert, president of the St. Louis Aero Club, are serving on the Board.

The entire Grand Hall of Mechanics Building will be devoted to the most complete exclusive exhibition of air-craft and accessories ever assembled in this country. Among the many entries so far arranged for are Capt. Baldwin's dirigible, the same ship in which he made successful flights during the Hudson-Fulton celebration; the celebrated "Boston" balloon, the "All America," and others from the different aero clubs, as well as a most complete exhibit by Aeronaut Leo Stevens will also be shown. Among the heavier-than-air machines are promised several Bleriots, a Latham, an Antoinette, Wright and other models. Hundreds of flying models will be sent from all over the country, including exhibits of the West Side Y. M. C. A. of New York, the Junior Aero Club of New York, Columbia and Harvard Universities, and many individuals. Many "freaks" will also be shown, of which the inventors make great claims, but have yet to "make good."

Edward Durant, of the Aero Club of America, will have on exhibition at the Boston aero show a collection of flying model aeroplanes which have been competing in the recent contests in New York, together with many other models made by members of various local clubs. In addition he will show some of the articles used by the first American aeronaut, Charles F. Durant. Anyone having models for the show may send them there, care of Mr. Durant, and he will see that they are properly taken care of.

IN THE WORLD OF AVIATION

May Be No International Aviation Meet.

There seems to be more than a possibility that America will not see the contest for the international aviation cup this year. The foreigners are expressing themselves as unfavorable in view of the pending Wright suits, and even the F. A. I., the international body, has inquired from the Aero Club of America as to prospects.

The international federation has allotted the bad dates, in view of weather probabilities, from October 18th to November 2nd for international aviation contests in this country. No other events of like character will be held abroad during this period.

ONLY FOUR FOREIGNERS ENTERED.

Italy, with one aeroplane, and France, with three, are the only countries that have made any entries. Of course, America has the opportunity of adding three more, making seven in all. There is still the chance that further foreign entries may be received as the date for closing is March 1st, but it is made plain by Mr. Bishop that the success of the meet depends on the outcome of the various Wright suits.

A circular letter has been sent out to various aero clubs by the Aero Club of America calling attention to the open period for international events, and suggests that such be organized at various cities during the two weeks above mentioned. National aviation meets are also urged, to be held during the summer, with the expectation of establishing a national racing circuit.

PROMISE GOOD RETURNS.

"Past experience has shown that the promoters of such meets can look forward to a complete reimbursement of the prizes they may offer, and the expense they may be put to." The circular states that the amount of money offered will have a great deal to do with the success of any meet, and while "at the present state of the art," when it is difficult to secure "*bona-fide* entries," an entrance fee for aviators and would-be aviators is proposed to prevent people from "getting free advertising * * * when they are really unable to fly."

The date of the big cup race must be set by April 1st.

WILL NEW YORK RAISE $100,000?

Cortlandt F. Bishop has offered to be one of twenty men to put up $5,000 each to have the Gordon-Bennett aviation contest held in New York. Looking back on the history of aeronautics in New York, one may well doubt the ability to get together any such syndicate.

The Los Angeles show has done a lot for progress, but another held in New York of equal or greater magnitude would do still more good. But the probability is mighty small.

Greene Machine Flies Without Tail.

The Greene aeroplane bought by Wilbur R. Kimball and used by him and F. E. Boland near Rahway in experimental flights, has been altered considerably. The rear vertical rudder has been removed entirely, and vertical surfaces have been introduced between the main planes. These are operated in such a way as to preserve lateral equilibrium as well as steering right or left. Mr. Boland has taken his brother up for a short flight. C. E. Fisher, who handles the Cadillac car in Newark, has also been a passenger. Patents are being taken out on the device.

Monoplane Wrecked.

The first attempt by a Washington, D. C., aviator to fly in his own machine resulted in the wrecking of the Moore-Avery monoplane on Feb. 10th, at Bennings race track.

Six starts were made—four by Mr. Moore and the last two by S. A. Luttrell. The latter was steering the machine when it dashed into the fence. He was not injured.

Robert Moore, constructor of the machine, with a half dozen assistants, arrived at Bennings about half past four o'clock. The bird-like machine, which weighed only 260 lbs., was carried from the shed adjoining the grand stand by three men, and was placed on the race course. After a few preliminaries had been arranged, Mr. Moore slipped into the operator's seat and gave the signal to start.

It was the first time either operator or machine had attempted a flight. The monoplane started off with a bound, making a speed of about 26 or 28 miles an hour. Within 150 feet from the starting point the aeroplane leaped into the air to a height of about 3 feet. It traveled at this height for about 30 feet. Moore, seeing that his machine was inclined to fly in the direction of the fence, which runs along the inside of the track, shut off the engine and brought the monoplane to a stop.

Immediately his assistants and a few friends who had been invited to witness the flight ran up the track and shook Mr. Moore by the hand, congratulating him on the successful start.

A second start was made with equal ease, and the machine made even greater speed than during the first test. But this time the machine again inclined its course toward the fence, and had to be brought to a stop. Moore made two more starts with his machine, each time with the same result.

The fifth start was made by Luttrell. Mr. Luttrell noticed the motor was missing fire, and brought the machine to a standstill.

The monoplane was again placed in the center of the race course, with its head pointing westward. Mr. Luttrell stepped in, this time getting a splendid start. Hardly had he traveled 200 feet along the ground when the front wheels of the monoplane leaped into the air. A gust of wind blew the machine to the right, the wing-tip scraped along the ground, and the craft suddenly turned and crashed into the fence. The propeller struck the fence and plowed its way through it.

Mr. Luttrell, shortly before the monoplane struck the fence, managed to creep out of his swinging seat, thus saving himself from injury. The damage done to the machine will necessitate a new set of planes and a new propeller. The motor and the elevating planes or rudder were not damaged.

Mr. Moore will reconstruct his monoplane, and probably will be ready to resume his trials during March.

Hamilton to Fly Over New York.

Charles K. Hamilton, who flies the Curtiss machine, promises to shortly fly over New York, and is now working his way east with the aeroplane.

From Los Angeles he took the 8-cylinder machine which won at Rheims and went to San Diego, where he made, according to eye-witnesses, some wonderful flights through the canyons, over the ocean and into the wild mountains of old Mexico. Shutting his engine off he would make glides of nearly a mile, it seemed, and the daredevil feats carried out made the hearts of the spectators stand still.

From there he went to Bakersfield and Fresno, Cal., and is now at Phœnix, Ariz.

The San Diego flights were under the auspices of the world's fair which is to be held there in 1915, while in the other towns the chambers of commerce took charge.

John F. O'Rourke Builds Aeroplane.

John F. O'Rourke, head of the big New York construction company which bears his name, is completing designs for an aeroplane, the feature of which is automatic stability. Within a short time the construction of a machine will begin.

There will be no rear vertical rudder, steering right and left to be done by the wing tips, which will resemble somewhat those of the Curtiss machine. These will be so arranged that at any angle of incidence of the machine the angle of incidence of the respective tips will always be equal.

Paulhan to Fly in New York.

Paulhan is scheduled to fly in the vicinity of New York, at Belmont race track, sometime about the middle of March. He will give exhibitions on several days.

Wright Aeroplane School in Florida.

February 10th.—Messrs. Wilbur and Orville Wright are expected to arrive in Washington to-day and receive the Smithsonian medal. One or both of the Wrights will continue on to Florida where grounds for a school are to be selected, probably in the vicinity of Jacksonville. Demonstrators will be taught to fly the machines so as to leave the time of the Brothers Wright free for management of their business. The factory at Dayton is now ready to turn out a number of machines.

Wrights Get Smithsonian Medals.

Washington, Feb. 14.—Last Thursday the Langley gold medal was presented to Wilbur and Orville Wright by the Smithsonian Institution in recognition of their achievements.

Dr. A. Graham Bell in addressing the assemblage, told of recent progress, referred to the work of Langley and the practical application by the Wrights. Senator Lodge spoke briefly and then Chief Justice Fuller presented the medals. Wilbur Wright replied in behalf of the aviators in a speech lasting about four minutes. After the meeting, the Wrights went to a quiet luncheon at the home of Dr. Bell, in company with Secretary Walcott, of the Institution, and a few friends.

BISHOP IN TOWN.

Cortlandt F. Bishop has an audience to-day with President Taft to present the resolution adopted at the St. Louis conference and to urge greater activity in military aeronautics. A committee from the Washington and Baltimore aero clubs are meeting him and they will discuss the possibility of holding the international aviation meet at College Park.

Government Aeroplane to Fly at San Antonio.

At the close of the Electrical Trades Exhibition at Chicago, January 15-29, at which was exhibited the U. S. Government "Wright Flyer," it went to Fort Sam Houston, San Antonio, Tex., in charge of Lieut. Benj. D. Foulois, of the Signal Corps, and a detachment of enlisted men. Ft. Sam Houston has a suitable open ground on the Government reservation and the winter climate is such that Lieut. Foulois will have ample opportunity for practice with the aeroplane.

Notes on the Los Angeles Flights.

Charles F. Willard has declared himself in favor of more than four cylinders. "Paulhan could fly with one or two missing and seemed not to mind at all. Curtiss, too, could keep aloft on six or seven cylinders, but let one cylinder go bad on a 4-cylinder engine and it's a case of—land"

Curtiss Factory Busy.

The Wright suit has not caused the shutting down of the Curtiss aeroplane factory as the latter concern put up a $10,000 bond indemnifying the Wright company. An appeal from the opinion of Judge Hazel has been taken by the Curtiss attorneys and trial on appeal will take place when a date has been set.

Glenn H. Curtiss was a guest at the annual banquet of the Automobile Club of America at the Waldorf Monday evening, January 31. The Steuben Club entertained him again at the Waldorf on February 1.

The New Farman.

Of the two Farman machines flown at Los Angeles, one was the new light apparatus mentioned in the Foreign Letter last issue. Following are the changes which have been made. The other details remain the same as described and illustrated in the drawings last issue.

The front horizontal control has been shortened laterally so that it does not extend on either side of the outriggers, and works in conjunction with a movable rear horizontal surface affixed to the rear edge of the upper surface of the biplane tail. See photograph. One of the rear vertical rudders has been done away with and the remaining one has been placed in the center of and between the tail planes. A rigid iron-shod skid has been substituted for the two caster wheels formerly supporting the tail. The running gear is practically the same, having only minor changes in the method of attachment of the pivot rods holding the wheel axle. The weight is given as but 800 pounds.

Herring Injunction Denied.

The application for an injunction to prevent Curtiss from making exhibition flights for his personal profit instead of for the profit of the Herring-Curtiss Co., made by A. M. Herring, who failed to deliver a flying machine to the U. S. Government after repeated extensions of time, was denied by Judge Coman. This was just before Curtiss left for Los Angeles, and if granted would have prevented him from flying there. This was an action taken by Herring after an injunction had been secured by Curtiss enjoining Herring from disposing of any of his stock which he received in return for patents or inventions, which, it is claimed by the friends of Curtiss, were never put in evidence by Herring.

Herring objected to Curtiss having his winnings or earnings by flights for himself, even though the directors of the company so voted. The directors then offered Herring the use of one of its machines with the same privilege, but this offer has not been accepted by Herring. Both Curtiss and Herring draw $5,000 a year salary from the Herring-Curtiss Co.

A Herring Aeroplane to be Seen at Last.

The W. Starling Burgess Co., Ltd., of Marblehead, Mass., state that they will have on exhibition at the Boston show which opens on February 16, an aeroplane which is being worked out from A. M. Herring's original design, with modifications proposed by Mr. Burgess of the firm. These are refinements in details of construction based on the company's experience with similar structural work in the lightest types of racing yachts.

S. Y. Beach Has Another New Monoplane.

The first week in February, Stanley Y. Beach was actively engaged in making the first tests with a new Bleriot-type monoplane he has recently constructed. The tests were made at Stratford, Conn, upon the frozen surface of Fresh Pond, a salt water pond over a mile in circumference, in which the tide rises and falls by means of an underground connection with the adjacent Housatonic River. Some little trouble was experienced with the motor—a 4-cylinder 2-cycle air-cooled engine of 25 h. p. at 1,400 r. p. m.—at the start, and this had to be taken off the machine and run on the bench with the propeller on for some time before it was working properly. In the first test on the pond, the motor would only run about half a minute at a time because of insufficient lubrication and no thrust bearing to take up the thrust of the propeller. By putting in an excess of oil, however, this trouble was got around. A pull of 150 lb. was obtained at 1,000 r. p. m., with the special 6 ft. propeller shown by Mr. Beach at a recent meeting of the Aeronautic Society.

When testing the engine and propeller in the monoplane on Feb. 3rd in the shed near the pond, Mr. Beach and his assistants ran the machine upon the ice broadside to the wind, which was blowing about 25 miles per hour. The monoplane, without wings on, started over the ice with the wind and rapidly accelerated. It finally swung broadside to the wind again and skidded sideways over the ice until it struck the shore, when it overturned, breaking the propeller. An old 8 ft. diameter, 4 ft. pitch true-screw propeller was then fitted. It was possible to use this propeller, which was a left hand instead of a right hand, because the motor was a 2-cycle and could be run in either direction. The engine drove the larger propeller about 1,000 r. p. m., also, and a pull of 220 lbs. was obtained and held with it. At 1,000 r. p. m. the motor develops about 16 h. p.

After fitting the new propeller, a trial was made without the wings in order to see if the tail would lift. This was fairly successful, the tail lifting enough so that the machine could be steered readily with the vertical rudder and several circuits of the pond were made.

On Feb. 5th, in a wind blowing 25 m. p. h., according to the weather bureau at New Haven, Mr. Beach got out his monoplane with the wings on and made several runs against the wind. The propeller pulled the machine 7 or 8 miles an hour over the ice against this strong wind, but save for the tail rising a short distance once or twice, the monoplane showed no tendency to get in the air. The cloth with which the wings are covered not being closely enough woven to hold all the air, it was coated with lacquer. An air-tight smooth surface was thus produced. The wings will probably have to be set at a somewhat greater angle in order to lift the machine, as they have not the pronounced curvature of the Bleriot, and are intended for a high-speed machine. The spread is 35 ft., and the area 168 sq. ft. The weight of the machine complete is about 450 lbs. Its over all length is 25 ft.

This machine, as well as a larger one of the Antoinette type, will be exhibited at the Boston Aeronautic show.

Paulhan Making Circuit in Exhibition Flights.

After the show at Los Angeles, Paulhan was taken by his manager Cleary, who is paying him $20,000 a month in real money, to San Francisco, where some flights were made on January 26 under the auspices of a daily paper. From there he went to Salt Lake City, Utah,, Denver, Colo., and thence to the City Park race track at New Orleans, La., for five days.

A two-day series began in Salt Lake City on January 30. While he went up to 4,165 ft. at Los Angeles, the ground at Salt Lake City is 4,366 ft. above sea level. Paulhan states that the motor worked perfectly. The barometric pressure there is 25.63 inches. On the 31st Paulhan flew up 300 ft. above the ground, and said that because of the rarity of the atmosphere he was unable to go higher.

Cleary's first demand was for a guarantee of $50,000. This was out of the question, and the Commercial Club agreed to pay all organization expenses, tickets, ticket takers, etc., and to give Cleary gross receipts for two days. This was accepted. It is estimated that he got in this way $6,000.

At Denver, on February 3, Paulhan's Farman biplane was almost completely wrecked in his third attempt to fly prior to his departure for New Orleans. After making several successful flights around the park he started a second time, and almost mowed down at least 200 persons inside the enclosure. The crowd had encroached upon the field, despite Paulhan's protests and warnings of danger.

At the second attempt he swerved the machine in trying to escape the crowd, and struck one of the badly filled irrigation ditches that cross the field at dangerous angles. One of the wires supporting the framework gave way, and the aviator realized that he must come to the ground; but directly in front of him were the spectators, who saw the machine sweeping down upon them.

Their only safety lay in throwing themselves on the ground, lying upon their stomachs. This they did almost as one man.

The machine sailed over them, but in the meantime Paulhan was having his troubles keeping afloat. The crowd miraculously escaped, but the front of the biplane hit the ground with such force that Paulhan was thrown out.

Unhurt, however, he rose, and pursuing the machine, which was bumping over the ground with motor still in action, caught it and stopped the motor.

Thousands rushed on the field and aided in taking the biplane back to the starting point, where it was repaired quickly, only to come to grief on the third attempt.

At New Orleans on February 8 he flew to an altitude of 1,200 feet. On the 6th he made a sensational glide from an altitude of 600 ft. at the end of a fifteen-minute flight, the second flight of the first day's entertainment.

H. W. Gill Building New Machine.

Howard W. Gill, of Baltimore, Md., is now building an entirely new model, which will make the third machine. The machine flown by Hill Beachey at Los Angeles was along the exact lines of the Curtiss, but with more curve to the planes, and equipped with a standard American and British automobile engine of 26 h. p. This was built solely to secure experience.

St. Joseph Man Has Aeroplane.

O. J. Pruitt of St. Joseph, Mo., has completed the construction work on a monoplane and is waiting to install a motor. It has 256 sq. ft. of supporting surface. The total weight is now 482 pounds. A 40-horsepower water-cooled motor of special make has been ordered. This will weigh 200 pounds with magneto, carburetor and pump.

It has a spread of 26 ft. and is 24 ft. long. The boat-like chassis is mounted on three bicycle wheels fitted with two coil springs to absorb the shock of alighting. The motor will be mounted at the front edge of the planes and the aviator will sit at the rear edge. A two-bladed 6½-ft. propeller with a 4-ft. pitch will be mounted direct to the crankshaft. The main spars are 1¾ by 1½-inch laminated white pine and hickory. The ribs are white pine, 1½ by ⅝ of an inch. Muslin is used for the surfaces, sized with decorator's glue and treated with paraffin and benzine.

This is the fourth machine built by the inventor within six years. Two were gliders and the other a biplane. He has made 21 hot-air balloon ascensions with an equal number of parachute jumps.

Many St. Louis automobile chauffeurs are building aeroplanes in their spare time.

THE WORLD'S AERO RECORDS

Aerostation

FREE SPHERICAL BALLOONS.

World's record, distance: Count Henry de la Vaulx and Comte Castillion de Saint Victor, Vincennes, France, to Korostychew, Russia (1,193 miles), in 35¾ hours, October 9-11, 1900.

United States record, distance: Oscar Erbsloh and H. H. Clayton, St. Louis, Mo., to Bradley Beach, N. J., 872¼ miles October 21-23, 1907, in 41 hours.

World's record, duration: Seventy-two hours, made by Colonel Schaeck, a Swiss military officer, from Berlin, Germany, on October 11, 1908, landing in the sea off Norway.

United States record, duration: Clifford B. Harmon and Augustus Post, St. Louis, Mo., to Edina, Mo., 48 hours 26 minutes, in St. Louis Centennial Balloon Race, October 4, 1909.

World's record, altitude: James Glaisher, September 5, 1862, claims to have reached 37,000 feet. This is now doubted. Professors Berson and Suring have reached an altitude of 34,000 feet.

United States record, altitude: 24,200 feet, reached by Clifford B. Harmon and Augustus Post, St. Louis, Mo., to Edina, Mo., October 4, 1909. Not official.

Lahm cup record (United States): 697 miles, A. Holland Forbes and Col. Max C. Fleischmann, St. Louis, Mo., to near Beach, Va., October 12, 1909.

DIRIGIBLE (STEERABLE BALLOONS).

World's record, duration and distance: German military dirigible "Zeppelin II." covered 900 miles in 37 hours 40 minutes on May 29-30, 1909.

World's record, height: French dirigible "Clement Bayard," bought by Russia, 1,550 meters, August 23, 1909.

Aviation

World's record, one-man duration and distance: Henry Farman, at Mourmelon, France, November 3, 1909, 4 hours 17 min. 53 secs., covering 234.2 kilometers. Won the Michelin cash prize and trophy for 1909.

Worlds' record, two-man duration and distance: Orville Wright and passenger, Captain Englehardt, September 18, 1909, at Berlin, Germany, 1 hour 35 min. 47 secs.

World's record, two-man speed: Henry Farman, with one passenger, at Rheims, France, August 28, 1909, 10 kilometers in 9 min. 52 1-5 secs.

World's record, altitude: Louis Paulhan, in a Farman machine, at Los Angeles, Jan. 12, 1910, 4,165 feet.

World's three-man duration, distance and speed record: Henry Farman, with two passengers, Rheims, France, August 28, 1909, 10 kilometers in 10 min. 39 secs.

World's shortest distance starting record: Glenn H. Curtiss, Los Angeles, Jan. 11, 1910, 98 feet. Unofficial, Dr. William Greene, at Morris Park, New York, November, 1909, 30 feet.

World's shortest time in rising from start of motor: G. H. Curtiss, Los Angeles, Jan. 11, 1910, 6 2-5 sec.

World's fastest average speed: Leon Delagrange, 49.99 miles per hour at Doncaster (England) aviation meet, October 26, 1909. Unverified: Santos Dumont made 59.61 miles per hour at St. Cyr, France, September 13, 1909.

Worlds' longest (time) cross-country flight: Col. S. F. Cody, at Laffans Plains, England, September 8, 1909, 1 hour 3 min., covering about 40 miles.

World's longest two-man cross-country distance and duration: Mr. and Mrs. Paulhan, Los Angeles, Jan. 19, 1910, 21 miles, 33 min. 45 2-5 sec.

Worlds' most spectacular feats: Count de Lambert, in a Wright aeroplane October 18, 1909, from Juvisy aerial race course (near Paris), over Paris, around the Eiffel Tower and return, 30 miles distance; time, 49 min. 39 2-3 secs.

Wilbur Wright, from Governors' Island, N. Y., October 4, 1909, up the Hudson to Grant's Tomb and return, 20 miles distance; time, 33 min. 33 secs.

Louis Bleriot's flight across the English Channel, from Calais to Dover, July 25, 1909; distance, about 31 miles, in 37 minutes.

One-man speed records for various distances:

Kiloms.	H.	M.	S.
1 Ferber	0	1	15
2 W. Wright	0	2	44
5 Tissandier	0	5	26 2-5
10 Bleriot	0	7	47 4-5
20 Curtiss	0	15	50 3-5
30 Curtiss	0	23	29 1-5
40 Latham	0	34	55
50 Latham	0	43	56
60 Latham	0	52	44 2-5
70 Latham	1	3	6
80 Latham	1	11	26 3-5
90 Latham	1	19	56 2-5
100 Latham	1	28	17
150 Latham	2	13	9 3-5
200 Farman	3	42	34

Louis G. Erickson, Springfield, Mass., is now building his second machine, almost entirely of bamboo, to weigh but 350 pounds, with motor. A four-cylinder "V" French motor-cycle motor, expected to give 16-18 horsepower, 3 by 3⅝ bore and stroke, 3,000 revolutions per minute, will be used. It is air cooled and weighs 115 pounds. The two planes will be 20 by 7. The previous machine was quite heavy and insufficiently powered, but the machine was built solely to provide experience. Mr. Erickson is amply capitalized in earnestness and otherwise, and has the third machine in anticipation.

WRIGHT-PAULHAN SUIT

Court Will Grant Wrights Injunction

February 10.—Judge Hand, of the United States Circuit Court, Southern Division, is now considering the briefs in the Wright-Paulhan suit and is expected in a few days to render an opinion whether a temporary injunction should issue.

When Paulhan arrived in this country papers in the suit were served upon him. The next day Judge Hazel's opinion in the Wright-Curtiss suit was rendered and that afternoon the Wright company got an order to show cause why Paulhan should not be enjoined from flying. This motion was argued before Judge Hand on Tuesday and Thursday of last week.

At one point in the Thursday hearing, Wilbur Wright himself took up the argument and was so convincing that the Court announced his intention to immediately grant the injunction but a question to Wright by Israel Ludlow, who is associated with Clarence J. Shearn in Paulhan's defense, raised the point of reasonable doubt whether the Farman machine operates like the machine of the Wright patent.

A sketch of the operation of the Wright aeroplane was printed in the November, 1909, issue; a sketch of the Farman machine was printed in the February, 1910, number. These issues are exhausted but copies of the sketches may be had.

HOW WRIGHT'S MACHINE TURNS CORNERS.

An affidavit of Lieut. F. E. Humphreys, of the Signal Corps, who has flown the Government machine, was put in evidence by the Paulhan side. The Wright attorneys also put in a Humphries affidavit which amplified the statements made in the previous one.

Lieut. Humphreys' operation of the Wright machine is described by him as follows, as regards turning:

> "In turning in flight the outer wing is elevated by increasing the angle on the side opposite to that to which it is desired to go. Elevating the outer wing is essential to prevent the aeroplane from skidding. The rudder is turned in the direction to which it is desired to go, which is also the side having the smaller angle of incidence. Therefore the wing with the greater angle rises and advances instead of being retarded as would be the case if the wings were warped without any movement of the tail. Technically considered, there are differences between the action of the vertical rudder of the Wright machine and the rudder of a ship, since in correcting lateral balance by warping the wings the rudder may be turned to one side to correct difference of the right and left wings, without causing the machine to turn. As the rudder is turned, the wings are warped. Then the angle of inclination on the outer side is brought back slightly past the normal so as not to continue the transverse inclination of the aeroplane further. Usually, during the turn the larger angle is on the same side as that to which the rudder is turned with reference to the longitudinal axis of the machine. To restore the course of a straight line, the rudder is brought back to a neuter state, and the aeroplane rights upon a horizontal balance. By the instruction of Mr. Wright, I aim to keep the machine skidding slightly outward when circling so that the rudder may be receiving a pressure on the side opposite the wing with the greater angle even when turnd slightly toward that wing as compared with the longitudinal axis of the machine, since the axis of the machine and the relative wind do not quite coincide. This is the rule in all cases unless unforeseen and unusual occurrences interrupt the operation.
>
> "The warping of the wings and the turning of the rear rudder is moved by one lever, which has two motions; that is, a forward and backward motion from front to rear to turn the rear vertical rudders from left to right; and the right and left transverse motion to increase the angle in each section, right and left respectively; that is to say, if one wants to make the larger angle on the right the lever is moved to the left. This enables the operator, in turning a corner, to increase the angle of inclination on the outer wing section and to elevate the same; or, should it become necessary, as sometimes happens to be the case from disturbing wind currents, the operator may increase the angle of inclination of one side, and at the same time to swing the rear rudder in the direction of that side of the machine whose angle has been made smaller. All the way around the curve the position of the rear vertical rudder and the warped surfaces vary, one state of affairs requires a different position of the levers from another. In the last flight I made on the machine which was in company with Lieutenant Lahm, the machine was flying close to the ground, when an attempt was made to raise the depressed wing by increasing the inclination of the low wing and decreasing the other but owing to failure to promptly set over the tail toward the wing whose angle had been decreased, the depressed wing refused to rise and struck the ground causing damage to the machine."

HOW PAULHAN TURNS.

In an affidavit submitted by Paulhan he says that though the "rear rudder is sometimes moved toward the angle of least incidence at the beginning of a sharp turn," it would be "suicidal to connect the rear rudder with the warping of the wing so that the rear vertical rudder would always be turned to the side having the least angle of incidence or to have the rear vertical rudders in any degree controlled by the movement of the aileron or the warping of a wing." He goes on to say:

> "Under one condition an operator might increase the angle of incidence considerably on the right and move the rudder slightly to the left. Under different conditions he might increase the angle of incidence slightly on the right and move the rudder considerably toward the left. Under other conditions he might increase the angle of incidence on the right and move his vertical rudder to the right. For example, suppose the aeroplane to be proceeding northerly with the right wing tilted up at an angle of 10 degrees or more and to be suddenly struck with a gust or air current from the east. The operator would instantly bring his rudder toward the east or the angle of greatest incidence so as to swing or steer the aeroplane into the head of the wind. It is to steer with, maintain and control direction that the vertical rear rudders are used and it is only occasionally as in turning a sharp corner that the rudders are used by turning them to one side or the other at the same time that the angle of incidence is changed and even in those cases as above stated, whether the rudders are turned toward the angle of least incidence or the reverse depends upon the condition of the moment. The all essential requirement for safe and practical

> operation is that the operation of the vertical rudders shall be wholly independent of and distinct from any wing warping or increasing angles of incidence by means of ailerons or otherwise.
>
> "In turning a corner in the Farman biplane machines * * * or in any aeroplane that I am familiar with, it is not at all essential to use the aileron so as to increase the angle of incidence on the outer edge in turning a corner. There are circumstances in making a turn in such machines and in a straightaway flight when the operator would use the aileron or warp the wings without turning the rudder at all and very often the rear vertical rudders are used without any interference with the ailerons or without any wing warping.
>
> "If for some cause such aeroplanes move obliquely to their longitudinal axis, in other words, skid, the use of the rudder alone will correct the aeroplanes' equilibrium and bring them back to their normal line of advance. The operator can make a complete turn by the use of the rear vertical rudders alone and without using either ailerons or warping to correct horizontal equilibrium. The rear vertical rudders have a most powerful turning effect in all cases. In making a sharp turn the outer end of the aeroplane may be tilted up and a new plane of movement established which may be at an angle of ten or more degrees. The tendency of the rudder during such movement is to swing the tail to the outer side of the turning arc with great rapidity.
>
> "Where one side of the Farman biplane * * * is depressed or tilted downward the side which is depressed tends to move more slowly and the aeroplane turns in the direction of the depressed side."

PAULHAN SAYS WRIGHT PATENT OF MACHINE IS IMPRACTICABLE.

Paulhan states in his affidavit that he is informed the Wrights have abandoned the system described in their patent and now build aeroplanes with absolutely independent action and control of rudders and wings. He says:

> "An aeroplane with flat sustaining surfaces is useless. To get lifting power the surfaces must be curved and the curve is a matter of careful study and adjustment and is not any mere curve that may be produced by a sagging or bellying canvas. As for having the rear vertical rudder controlled by and dependent upon the movement of the rope or lever that changes the angle of incidence, that is utterly impracticable and extremely dangerous. * * * Under such conditions a gust of wind or sudden air currents from the side of the aeroplane that was tilted up would inevitably upset the machine unless the rudder could be quickly and sharply turned toward the wind so as to steer the machine around into the face of the wind."

PRIOR ART.

That the Wrights admitted the prior art in the file wrapper of their application for patent is claimed in the quotation following:

> "We are aware that prior to our invention flying machines have been constructed having superposed wings in combination with horizontal and vertical rudders."

After mentioning the airship patent of Lewis A. Boswell, Sept. 24, 1901, the Mattullath patent application filed Jan. 8, 1900, and the D'Esterno, Mouillard, Le Bris and Ader machines discussed in Mr. Chanute's "Progress in Flying Machines," an affidavit is submitted signed by Dr. A. F. Zahm. In this he refers to his paper read before the Chicago Conference on Aerial Navigation in 1893, and printed in the proceedings in 1894 in which Dr. Zahm suggests moving the slats of the Phillips machine on either side thereof so as to present one side of the machine at a greater or less angle of incidence than the other to "arrest all pitching, rocking and wheeling." He goes on to say:

> "In general, at the close of the 19th century all essential principles and contrivances of pioneer flight were well worked out except one—a suitable motor. * * * A light automobile motor appeared in the latter nineties and promptly thereafter followed the dynamic flyer. * * * The essential elements of aviation, barring the motor, had been clearly worked out. No further need to prove feasible the heavier-than-air machine, for that had been done repeatedly. Scientific design and patient trial, not physical research, was the chief demand. Further research would improve the aeroplane, but not bring it into practical operation. The aeroplane was sufficiently invented. It now wanted, not fastidious novelty, but concrete and skilful design, careful construction, exercise in the open field.
>
> "The first person, to my knowledge, to apply for a patent involving the three-rudder system control was Hugo Mattullath, who in 1899, showed me, and many others, plans for an aeroplane having a vertical rudder in the rear and lateral steering planes on either side, fore and aft, of the main body, so disposed that he could cause the aeroplane to turn about either of the three rectangular axes at will."

New York, February 17.—Judge Hand to-day rendered opinion that "ailerons" are equivalent to general helicoidal warping through the whole plane, and will grant temporary injunction. Appeal being taken by Paulhan's lawyer.

Newark Aero Show.

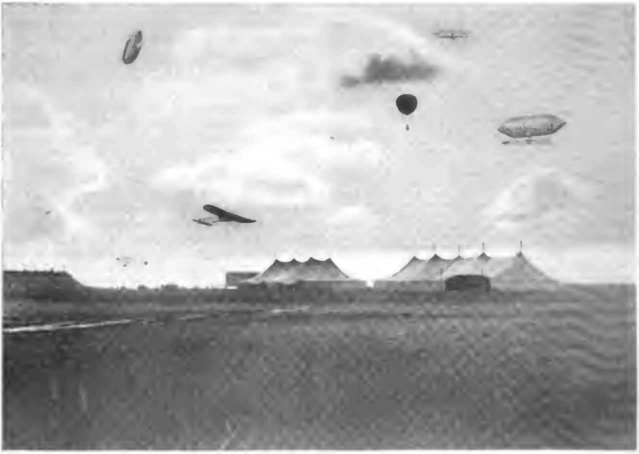
There will be an aeronautical division to the automobile show at Essex Troop Armory, Newark, N. J., February 19-26. This is being organized by the new Aeronautic Society of New Jersey. Full-sized machines will be there, as well as a large number of models, photographs, etc. To reach the show take Lackawanna R. R. to Roseville station, Newark.

Henry Ford, the automobile manufacturer, is taking a significant interest in aeroplane construction. This is also true of an officer of the Packard Motor Car Company, as well as of Alexander Winton, the automobile maker, and Dr. Lee De Forrest, the wireless man.

The Steingruber machine in Memphis is about finished, with the exception of the motor, for which the inventor is now waiting. The machine is really a kind of odd biplane, consisting of two planes below, one forward and one in the rear, with a plane above immediately over the opening between the other two. The control of the machine is to be by means of the latter upper plane. Underneath all is carried a canoe or boat hull of light construction, mounted on four wheels, which will enable landing on either land or water.

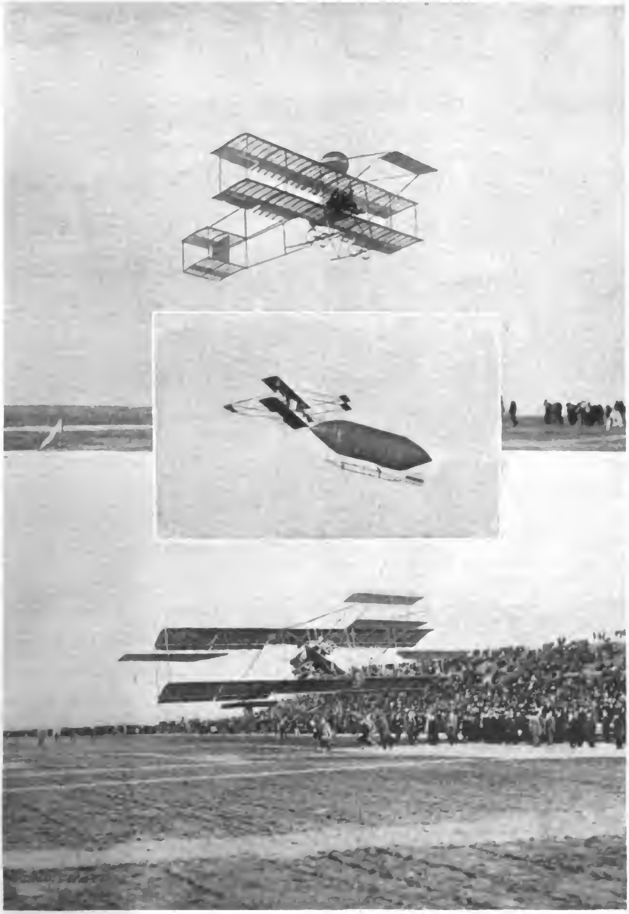
Morris Bokor, whose triplane was last summer rather a negative success, has just left for Austria at the bidding of the government, which has been watching his work through its consul here.

AEROPLANES, AIRSHIPS *and* BALLOONS



Upper—Shows all types in air at once —— Lower—Curtiss Machine from a Balloon

SAIL AT LOS ANGELES AERO SHOW



Upper—Paulhan's new Farman with three aboard — Lower—Curtiss winning short start contest

News In General

Washington Auto Show Has Aero Division.

It was not till the arrangements for the Washington Auto Show, held at Convention Hall, January 24, were well under way that it occurred to anyone to have an aeronautic end to the exhibition. There was a paucity of time, money and experience back of the promoters, but there was an abundance of enthusiasm and while the Washington Aero Club did not lend its aid there was a very good exhibit gotten together.

Robert Moore, chief mechanic for Emile Berliner, the telephone man, had on view a monoplane much like the Bleriot in general appearence but weighing only 262 pounds all on. It is driven by an Adams Farwell motor with a single tractor propeller. The engine is rated at 36 h. p., but the Berliner shop is now turning out a 50 h. p. seven cylinder revolving motor that is to weigh only 150 pounds and this will be installed in the monoplane after it has been tried out with the smaller motor.

The lateral balance of the machine is practically automatic, the wings being set at a very small dihedral angle and kept in place with springs that will allow them to tilt slightly when air pressure is put on them. Mr. Moore says frankly that this is purely an experiment but that he thinks it worth trying. The workmanship of the machine throughout is good.

The monoplane of J. H. Smidley, which was tried tentatively at Bennings last year, has been entirely rebuilt and is quite as good looking a piece of work as the Moore monoplane. It has only an 18 h. p. engine but it is ready for a trial and will be taken out as soon as the weather permits.

Rexford Smith, a patent attorney and old trick bicycle rider, has a biplane looking much like the Curtiss but larger balance, with an automatic system for maintaining the lateral. It has not been tried out and the motor has not been fitted but there is a fair chance of it flying.

Besides the man-carrying machines there are a dozen models of different sorts, none of them strikingly new though there is a small monoplane, on which the National Air-Craft Construction Company is now working at its shop here, that is rather different from anything that has actually flown. It is controlled laterally by tilting wings and has a main plane that is fluted fore and aft with the intention of the flutes acting like the anti-skid chains on an automobile in case of a side dive.

There are four propellers on view, some by the company just mentioned and some by Spencer Heath of Washington. All of them are very fine specimens of mechanical work and designing.

The Church Aeroplane Co., of Brooklyn, has a lot of little flying models on exhibition, driven by rubber bands. All of them are fine pieces of work but are rather expensive as toys. The Eagle Kite Company also has quite a show of bird kites.

Some of the aeronautic exhibits are to be sent to Baltimore for the show there February 22 to 29.

Incorporations.

The Aeroplane Advertising Co., Manhattan; general advertising, etc. Capital, $15,000. Incorporators, Lee De Forest, No. 103 Park Ave.; Harry M. Horton, John J. Reilly, both of No. 59 West 44th St., all of New York.

American Aeroplane Co., No. 119 Market St., Wilmington, N. C., incorporated with $125,000 capital stock by F. A. Bissinger, W. B. Cooper, C. H. Dock and others to manufacture aeroplanes invented by David Palmgren.

Aerial Demonstration Co., of New York City, which proposes to construct airships. The company has a capital of $100,000 and the directors include W. E. Allen, W. Briggs, J. F. Gasby, John J. Harper and E. J. Fohan, of New York City.

Colfax Aeroplane Co., Colfax, Calif. Capital $50,000. Dan C. Gillen, Lyman Gilmore, Richard De V. Bessae, Dan A. Russell, incorporators.

Swivel Buggy and Wagon Co., Richmond, Va. Incorporators, A. W. Miller, John A. Robertson, G. J. Cawley. Charter includes flying machines.

Fleiss Equipment Co., Brooklyn. Manufacture airships, aeroplanes, balloons, etc. Capital, $100,000. Incorporators, Charles E. Muller, No. 27 Willoughby St., Brooklyn; Beresford W. D. Woodward, No. 590 Sixth St., Brooklyn; Geo. Bender, No. 133 Washington Market, New York; John P. Muller, Lake Hopatcong, N. J.

An Indianapolis company is being formed for the manufacture of aeroplanes of which Carl G. Fisher is expected to be the head. Three flying machines have already been sold. They are being built on the third floor of the Fisher Automobile Company garage and it has been inspected by many interested persons. Names of the men who will be associated with Fisher in this company have not been announced.

Another company is being formed for the manufacture of aeroplane engines. Members of this company are C. G. Fisher, A. C. Newby, F. H. Wheeler, J. A. Allison, Howard Marmon, William G. Wall and E. A. Moross. Two separate companies have been formed for the reason that it is believed that the demand for engines will greatly exceed that for aeroplanes.

Pacific Aviation Company, Portland, Ore. H. W. Manning, W. M. Davis and Arthur I. Moulton are the incorporators. The capital stock is $50,000.

Prehle-Rekar Airship Company, Portland, Ore. The officers of the new corporation are: C. W. King, president; Richard Martin, vice-president; Grant Phegley, treasurer, and F. H. Whitfield, secretary. C. H. Preble and J. J. Rekar are directors. It is the plan of the corporation to purchase or lease about four hundred acres of land adjacent to the city, where air craft of all descriptions will be built. The chief aim of the corporation, however, is to exploit the Preble-Rekar dirigible airship. It is expected the trial trip can be made early in May.

Aero Motion Company of America, St. Louis, Mo. Among the incorporators are H. Brussel, M. Seguin and J. P. Walsh. The nominal capitalization is $2,000.

M. Seguin, secretary of the Re-enforced Concrete Construction Company, is one of the leading promoters of the venture.

"It will be the only aeroplane factory and agency outside of the Curtiss Company in America," said Mr. Seguin, who has been a resident of St. Louis for ten years.

"When we get started we intend to establish a factory for the manufacture of heavier-than-air machines. My brother, Laurent Seguin, of Paris, is the designer of the Gnome machine."

Illinois Aeroplane Club, Chicago, giving exhibitions. Edward E. Harhert, Oscar Newstrom, John A. Montgomery.

The Aero Club, Philadelphia, Pa., has applied for a charter. It was stated that the purpose of the organization is to make a special study of aerial navigation, and to bring together in social intercourse all aeronauts who find recreation from business cares by going up in the air.

The board of directors is composed of the following flyers: Arthur T. Atherholt, R. H. Beaumont, Louis J. Bergdoll, John Hickock, Lawrence Maresch, Rev. George S. Gassner, Henry S. Gratz, Robert D. Carson and Thomas Tuttle.

Boston Aeronautical Manufacturing Co., Boston, Mass., to manufacture, sell and deal in inventions such as flying machines, etc.; capital stock, $500,000.

Aerial Navigation Syndicate, Sacramento, Calif.; capital, $10,000. Directors, F. C. Dittmar, James C. Clarke, Earl Wayne.

The Mathewson-Marr Aeroplane Co. of Denver is being incorporated, with $50,000 capital stock, to manufacture aeroplanes on the design of Walter L. Marr. A building has been secured to manufacture the aeroplanes at popular prices. The office of the company will be at 1624 Broadway, Denver.

Patents.

Levi Felker, Washington, D. C., No. 942,629, Dec. 7, 1909. Aerial navigating apparatus. Structure comprises a housing mounted on wheels and provided with aeroplane steering rudders at the front and rear. Rotatable shafts have rods revolubly connected and wings are mounted at right angles to each other upon said rods.

Sydney S. Williams, Chicago, Ill., No. 942,691, Dec. 7, 1909. Gyroscopic aeroplane, which consists of an attachment to any class of flying machine rather than a concrete structure. Several rotating gyroscopes are formed of hubs provided with blades without pitch and circumferential rims, so mounted that the axis of rotation may be inclined to various extents.

Thomas F. Dunn, New York, N. Y., No. 942,958, Dec. 14, 1909. Flying machine, or, more properly, a dirigible balloon, the essential features of which are a transversely arranged propeller shaft, having at its ends radially arranged blades and means for giving an oscillating or vibrating movement thereto.

James Means, Boston, Mass., No. 943,120, Dec. 14, 1909. Aerial navigation. The combination with lateral, longitudinal and vertical rudders of a pivoted lever having universal movement and adapted to be manually operated, to control the various rudders.

Amiel Bratschie, New Castle, Pa., No. 943,732, Dec. 21, 1909. Airship, consisting of upper and lower revolubly mounted wind wheels, rotating in opposite directions, a series of wings arranged in said wheels, said wings being of peculiar configuration, designed as comprising substantially triangular walls, with closing flaps hinged to swing downwardly between the ends of the inclined walls of said wings when the rotation ceases so as to form parachutes of said wings.

Aaron W. H. Warshavsky, New York, N. Y., No. 944,301, Dec. 28, 1909. Flying machine, comprising a main frame, rotatable shafts mounted thereon, serving to oscillate wings by means of cams and pins mounted on the shafts. Means are also provided for adjustably timing the oscillation of the wings so as to maintain corresponding wings on the same side of the machine in parallel planes.

J. N. Sparling, Grafton, Ill., has installed a new 30-h. p. water-cooled motor in his Bleriot-type monoplane, and will make trials in Missouri, across from Grafton, in February and March. His apparatus is complete and he waits only for the ground to harden.

Court Enjoined Aero Club.

Cortlandt F. Bishop

The day of the meeting held on Monday, February 7, of the Aero Club of America for the voting on the proposed new scheme of incorporation, constitution and by-laws, Judge Gerard signed an order restraining proxy voting and ordering that those members of the opposition forces who were dropped from membership just previous to the annual meeting be reinstated and allowed to vote, that those who have not been legally elected to membership by having their names sent to the other members be restrained from voting at this meeting, and ordering the books of the club open to the inspection of the insurgents.

This order was granted on the application of Thomas A. Hill and Gutzon L. M. Borglum. Trial of this suit, brought to declare the annual meeting illegal, as well as trial of a suit instituted by William J. Hammer will come up probably in March, it is stated. The Court at the same time denied the Hill-Borglum request for the restraining of the holding of the meeting on the by-laws. As soon as the opinion of the Judge was given on the bench the insurgents got out literature to the members and on the morning of the day of the meeting Mr. Bishop, the president of the club, and against whom the suits have been brought, endeavored to get an order to show cause why the insurgents Hill and Borglum should not be held in contempt for getting out the circular containing the Judge's orders before the actual signing of the order. The request of Mr. Bishop was denied.

At the February 7 meeting a large majority vote carried the proposed new plans, which are mentioned below. The insurgents claim that the new scheme is not a legal method of reorganization as well as a poor one and say that the new plan cuts off what little rights the members may have had under the old by-laws. Unless new actions are brought by the insurgents, or a compromise is reached, it may be presumed that the new plan will be carried into effect.

MAY COMPROMISE.

It is known that prominent members of the club from both sides of the controversy have already been discussing the prospect of a settlement of the differences, with indeterminate results.

REORGANIZATION PLAN.

The report of the reorganization committee contains substantially the following recommendations, which were adopted at the meeting mentioned before.

(1). The name of the present stock corporation "Aero Club of America" in which the stock is owned by five members, to be changed to "Aero Corp. Lim.," hereinafter called the "corporation."

Thomas A. Hill

(2). A membership corporation to be formed with the name "Aero Club of America," hereafter called the "club."

(3). The shares of stock in the "corporation" to be assigned to the "club."

(4). The stock of corporation to be voted pursuant to direction of board of governors of the "club" who shall select the directors for the "corporation."

(5). The "club" to acquire and take over assets of "corporation" except $500 representing paid up capital of corporation. All exhibitions and contests to be conducted by the "corporation." Stock of "corporation" to be increased as may be required, such additional stock to be acquired and owned by the club.

WHAT THE INSURGENTS WANT.

The main plea of the rebels is for greater participation by the members in the affairs of the club. They also object, as before stated, to the method of reorganization. At the meeting they presented, after hasty preparation as a temporary remedy even with the new plan, some amendments which are mentioned below:

Amendment making it obligatory upon the club to send out a call for a meeting to amend constitution when application for same is signed by at least 25 members.

Giving members right to have meetings other than annual when 15 members make application for same.

Having monthly meetings for transaction of business and interchange of views, etc.

Business involving other than ordinary expenditures or affecting the policy of the club to be brought before the members.

The election of all governors and officers by the members.

Nominations for governors and officers to be printed on one ballot to avoid publicity for each member's vote and preventing the use of various colored ballots to intimidate voters, as was done in the annual election.

Give members opportunity to protest "for cause" any name proposed for membership.

Non-suspension or expulsion of members except by a three-fourths vote of the members at a meeting at which at least 50 are present, and giving such members opportunity to have copy of charges and chance to be heard. New by-laws provide for expulsion by directors.

The exercise of parliamentary procedure at the meetings so that members may not be improperly deprived of the privilege of speaking.

WANT CLUB TO FULFILL ITS STATED PURPOSE.

The insurgents want the club to be more active in aeronautics and try to advance the art. They want to have regular members' meetings, with talks, to arouse enthusiasm; the appointment of various committees to take up aggressive steps forward; the end of autocratic power of the board; the forming of a library on aeronautics; and in general the participation by the members in the affairs of the club. They say that no members' meetings are held and nothing affecting the policy of the club ever comes before the members for unrestricted discussion. They want the club reincorporated on broad lines as a stock company, as has been done already by three other clubs, notably the Cleveland aero club, of which Alexander Winton is the head. Each member in that club receives a share of stock which gives him full voting power, in person or by proxy, and affords the individual member such rights as are provided for by stock corporation law. Personal liability in case of suits for large damages which may grow out of contests or exhibitions is thus limited, whereas, it is claimed, under present conditions, each member is peronally liable under certain conditions for his share of any debts or damages.

The insurgents also claim that the meeting of February 7, at which the new by-laws were ratified, was without warrant in law and state that any attempt to take advantage of the same will be met by further actions in the courts.

Lectures.

"Balloons and Ballooning from a Practical Standpoint," was the subject of the lecture which Albert Bond Lambert, vice-president of the Aero Club of St. Louis, gave on January 13. He was followed by E. Percy Noel with an illustrated talk on air travel in general. The audience was the Association of Mathematics and Science Teachers of St. Louis. The members were anxious to know something about aeronautics so as to be able better to answer the questions of their scholars and to be able to speak in the class room with a general knowledge of the subject. They were extremely interested listeners, taking notes in abundance, and after the stereopticon views asked Mr. Lambert many questions.

Aero Books.

Prof. Joseph Hidalgo, of the State University of California, lectured a short while ago on the "History of Aerial Navigation" before the Pacific Aero Club, and his lecture has now been incorporated into a neat booklet. The chapters cover balloons and parachutes, scientific aerostation work, dirigibility of balloons, military ballooning, foreign dirigibles, flying machines, Wright aeroplane, flying machines in warfare, etc. The various machines built in and around San Francisco are described and illustrated.

The "A B C of Aerial Navigation" is the attractive name of the latest publication on aeronautics, and is, as its name implies, an elementary treatise covering balloons, dirigibles and flying machines. It is by Victor W. Page, M. E., the mechanical expert of the New England Automobile Journal, and is a compilation of reprints from that magazine. The various well-known motors are described and illustrated, there is a chapter on the various devices employed for obtaining stability, construction details, etc.

At Morris Park

ACTIVITY at Morris Park has waned somewhat during the extreme cold weather. The Beach machine has been taken to the inventor's home in Bridgeport, where he is building a smaller monoplane along the lines of the Bleriot.

W. J. Diefenbach is still working on his large biplane, which is nearly completed. Louis Rosenbaum is also completing his small monoplane, equipped with a Curtiss 8-cylinder air cooled motor. Lindsay is changing his motor into a water cooled affair. Just when he will try his machine is impossible to determine.

Joke?—Who should have been the first man Biblically reported to have been connected with a flyoplane? Aaron-ought.—*Walter Levick.*

WITH THE BALLOONISTS

Fourteen in Balloon Race.

Fourteen balloons have already been entered for the international balloon race, the date of which will have to be set by March 1. Denmark will have a balloon—the first time that Denmark has ever appeared in an international race.

The list is as follows: Denmark 1, France 3, Germany 3, Italy 2, Switzerland 2, United States 3. England has not entered.

St. Louis, Omaha, Denver and Kansas City all are bidders for the race. The cup which Mr. Mix won from Switzerland last fall is still in Switzerland—at least this country has not yet been able to get it away from that country as the last holder.

Balloon Trophies Awarded.

Accomplishments in aeronautics during the past season and expectations of what is to happen the coming year were discussed at a meeting of the Aero Club of New England January 24 at the Boston City Club. The meeting was notable because of the presentation of two trophies to H. Helm Clayton, of Canton. These were the Boston Herald and Fitchburg trophies, and were won by Mr. Clayton's trip from Fitchburg to Winchester, his landing being the nearest to Boston Common during the year. Both trophies will be offered for competition during 1910. About fifty guests were present, and Charles J. Glidden presided.

The Boston Herald trophy was presented to Mr. Clayton by Dr. William R. Ellis.

The Fitchburg trophy was presented by C. F. Wilson, secretary of the board of trade of that city.

Professor A. Lawrence Rotch, director of Blue Hill Observatory, spoke on "A Contribution of the Aerologist to the Aeronaut," and said in part:

"The Blue Hill station is the first station in the world at which aerial observations have been made by kites in which much has been done by Mr. Clayton. By flying kites to an elevation of three miles with recording instruments valuable data have been gathered simultaneously on wind velocity, temperature and humidity. It has been found that at moderate altitudes in the free air the wind velocity is lowest during the afternoon and highest at night.

"An investigation has been made also of the trade winds and of the upper return trades by a French colleague and myself, and if Count Zeppelin crosses the ocean it will be by way of the northeast trades, returning to Europe in the higher southwest current, thus profiting by the prevailing winds as a low-powered steamship does. Experiments have also shown that a balloon leaving the coast with an offshore wind may return on a breeze blowing from the sea. I think that in the future aerologists will be found not easily dispensable in aeronautics, and will, in fact, be made more of than to-day when weather observations can be put to a more practical use."

Manager Chester I. Campbell, of the first national exhibition of aeronautical craft, said that the exhibit would include eight large aeroplanes, five gliders, seventy-five models, three balloons, three dirigibles, five exhibits of engines and over 3,000 pictures, with other exhibits promised. The other speakers included President L. R. Speare, of the American Automobile Association; Professor William H. Pickering, of Harvard; J. Fortescue, secretary of the Bay State Automobile Association; W. H. Gannett, of Augusta, Me.; E. C. Brown, secretary of the Harvard Aeronautical Association; J. J. Van Valkenburgh, of South Framingham; Dr. F. L. D. Rust, A. V. Wilson, of Bar Harbor, Me.; A. A. Merrill, in charge of the aeronautical division at the Boston Y. M. C. A.; Alfred R. Shrigley, secretary of the Aero Club of New England, and William Carroll Hill, of the Associated Press.

FOREIGN LETTER

Algiers.

AEROPLANE BURNS UP.

M. Oleschlaegers began the second week of January with a 54 min. flight in a Bleriot machine at Oran, over the town, in the course of a series of exhibitions. On the 18th he flew for 1 hr. 5 min. 12 2-5 sec. On the 20th his foot caught in steering gear, machine dropped, hit telegraph wires, rebounded to railroad track, caught fire, destroyed.

Australia.

The first aeroplane flights in Australia have recently been made by a Wright aeroplane under the auspices of a theatrical concern. It has, however, made but short jumps. No derrick is used, the machine being mounted on three wheels.

Bohemia.

A Wright aeroplane was used in exhibition flights at Prague the first week of January.

Canada.

CANADIAN AEROPLANES' SUCCESS.

Successful flights have been made with the "Baddeck I" and the "Baddeck II," the first two machines to have been built by the Canadian Aerodrome Co.

These are practically duplicates of one another. The supporting wings are 40 ft. spread, exclusive of the balancing rudders or "wing tips," and 7 ft. deep at the middle, gradually decreasing to 5 ft. at the extremities. The wings are spaced 6 ft. 3 in. at the centre, the spacing gradually decreasing towards both ends to 5 ft.

The general form has been characteristic of all machines, including those of the Aerial Experiment Association. The bow control is double-decked, and hinged 15 ft. from the front edge of the main surface. Its planes have the following dimensions: 12 ft. spread by 28 in. depth, and are spaced 30 in. apart.

These also are the exact dimensions of the longitudinal balancer, or tail, which is secured 11 ft. distant from the rear edge of the main planes. The vertical rudder is hinged between the surfaces of the tail, and, although small, serves amply when called upon.

The wing tips have approximately the shape of a quadrant with a radius of 5 ft. There is one of these placed at the extremity of each main surface, the two at the starboard end working together and the port pair acting in a similar manner. They are operated by wires connected to a movable shoulder-brace which fits around the operator's back and shoulders.

The front control and the rear vertical rudder are operated by a single wheel. The third or front wheel of the chassis is attached so that it is capable of being turned right or left, as in a tricycle.

A single propeller of 7 ft. 8 in. diameter with an average pitch of 6 ft. is used. This is driven by chain drive in a ratio of 3:5 from a 40 h. p. Kirkham motor. This engine is an automobile motor, six-cylinder and water-cooled, of standard make, and has given every satisfaction possible, developing 40 h. p. at 1,400 r. p. m., and 48 h. p. at 2,000 r. p. m.

The radiator used is one of their own design, and consists of 30 tubes, so arranged that they give, apart from their cooling properties, the greatest lift possible with the least drift. These tubes are 7 ft. 6 in. long, and 3 in. wide, and 3-32 in. thick, and they have the same fore and aft curve as that given to the main surfaces. Such a form of radiator is practically self-supporting, even including the water carried.

At present, the machine is simply being tested on a small field at Baddeck, and although many flights were made this fall, the inventors are not prepared to publish much concerning them just now. They have to rely on ice for good "grounds," and are waiting for the large bay there to freeze over when they hope to get in some good flying. A fifteen-mile circular flight with fourteen complete turns was made a few days ago.

Egypt.

On January 27 Latham fell with his Antoinette at Heliopolis, where a meet is on. The monoplane was wrecked.

On February 9, H. Hayden Sands, an American pilot of an Antoinette, was reported to have beaten a world speed record.

England.

AERONAUTICAL SOCIETY OF ENGLAND TAKES BOLD STEP.

The council of the Aeronautical Society of Great Britain is addressing an official letter to the press warning the public against investing money in aeronautical businesses, or paying premiums for instruction in aeronautics, without first making thorough investigation. It is hoped that this will have a good effect.

FIRST DETAILS OF ENGLAND'S BIGGEST AIRSHIP.

The new government dirigible No. 2A will make its first trials next month. It will be of 72,000 cubic feet capacity, with a Green motor of 100 horse-power driving two propellers, the blades of which are so attached as to enable the pitch to be altered at will. The "empennage" will, it is gathered, be rather more elaborate than in the preceding models. The present only airship in England, the "Baby," is to be lengthened by 24 feet. The envelope will be cut in half and that length added in the middle.

Lieut. Dunne's aeroplane is now undergoing trials at the Aero Club's grounds in the Isle of Sheppey. It is a biplane with the somewhat startling peculiarity of possessing no forward governor or tail. Its planes are crescent-shaped, and at the rear corners of the top plane are two "wing-tips" by which the entire control is effected. The motor is a 50 horse-power Green, driving two propellers, one on each side at the back of the planes. The spread of the planes is about 46 feet, and the depth 5½ feet. His object in building this machine, which is the fifth he has constructed, is to try to obtain automatic stability. The planes have a very big negative curve at their forward edge.

A very large company is starting in the Midlands for the manufacture of flying machines and dirigible balloons and all appliances. Beyond the fact that it is to have a large capital nothing further is known.

France.

LATHAM GOES UP 3,100 FEET.

Though outflown by Paulhan at Los Angeles, still Latham's feat with his Antoinette, on January 7, going to a height of 1,000 meters, was a great one. Its duration was 42:11 2/5.

PUPIL MAKES 1¾-HOUR TWO-MAN FLIGHT—NEW WORLD RECORD.

Van den Born, one of the latest of Henry Farman's pupils, flew at Chalons on January 5 for 1 h. 16 m. On the following day he and Farman flew together for 20 kil. On the 8th Van den Born came down account of carburetor trouble, after 56 min. Other flights were made on succeeding days of half-hour length. On the 23d he made a cross-country flight of 20 miles.

On January 31 he was up with a passenger 1 h. 48 m. 50 s., covering 151 kil. This beats Orville Wright's world record with passenger.

ANOTHER 1¾-HOUR TWO-MAN FLIGHT.

M. Efimoff, an H. Farman pupil, was up over an hour at Chalons on January 21. On the 26th he was up for 53 mins.

ALMOST BEATS WORLD'S RECORD JUST MADE.

And again, this time with a passenger, on January 31, for 1 h. 48 min. 30 s., covering 158 kil.

Lieut. Camerman, another H. Farman student, a military officer appointed to this duty by the government, has started in on successful flying.

WOMAN HAS ACCIDENT.

Mlle. Dutrieux, who is practicing with a Santos-Dumont, had an accident on January 21. The machine suddenly shot head down and regained perpendicular after striking the ground. The young lady was unhurt.

Maurice Farman started from Orleans to fly back to Chartres (see last issue), but ran into fog after going 38 kil. and had to land.

The Lebaudy Brothers, builders of the famous dirigibles, are to manufacture monoplanes.

Sommer has finished the biplane of his own design and had first successful trials.

Count Lambert has fitted a cellular tail to his Wright machine.

FETTERED, TO FLY MACHINE.

Houdini, the "Handcuff King," who quickly frees himself when handcuffed and fettered by chains, has bought a Voisin machine and has been practising. As soon as he is better skilled he will be handcuffed on starting and expects the machine to guide itself until he can free his hands.

70 H.P. WRIGHT MOTOR.

The Wright Bros.' motor is now produced in 70 h.p. size, one having been built for a hydroplane by Bariquand and Marre, the French builders of Wright motors.

During 1909 Paulhan's accumulated flights, in both Voisin and Farman machines, totaled over 654 kil. (406 miles); Tissandier, with his Wright machine, 315 kil. (196 m.).

Hungary.

Hungary is beginning to have real flights. A Dr. Kutassy has recently bought a Maurice Farman aeroplane and succeeded in flying at Budapesth for about 5 kil.

Ireland.

The first flight in Ireland has been made, in January, by H. G. Ferguson, of Belfast, with a monoplane suggestive of the Bleriot. It has a supporting surface of 192 sq. ft., 34 ft. spread, total length 30 ft., 35 h. p. 8-cylinder J. A. P. engine, weight 620 lbs., wings set at dihedral angle of 4 deg.; angle of incidence in flight 7 deg.

Turkey.

The army is to have three aviation sections.

(Continued on page 115)

Los Angeles Meet

(*Continued from page 81*)

NOTES OF THE MEET.

One item of particular interest at this time, in view of the suit brought by the Wright Brothers against the Curtiss company, was a straight flight by Hamilton in a Curtiss machine with the rear vertical rudder tied. This was to demonstrate that it is not necessar to use the rudder in conjunction with the use of the wing tips in flying the Curtiss machine.

One impression received was that the large heavy aeroplane will supplant the light racing type as a commercial possibility.

One noticed also that Paulhan "banked" his machine in making corners, while Curtiss barely swerved from the horizontal.

THE SHOW DAY BY DAY.

Following is a daily history of the first big successful flying exhibition held in America. It will, no doubt, afford a stimulus, much needed, to aviation in this country, and it is likely that the East will follow in the holding of similar spectacles. But success depends outside of weather conditions, solely on the aviators making a good showing. Each succeeding affair will have to furnish something bigger than its predecessor. The public will expect past performances at least to be equaled, if not surpassed.

1st Day, January 10.

The meet opened with a decided French accent, inasmuch as Paulhan, in his old Farman, was the only aviator to make a complete circuit of tht course (1 61-100 miles) during the day.

Glenn Curtiss started events by making a qualifying flight on a brand new machine. Chas. F. Willard, with the Curtiss machine of the Aeronautic Society, in a pretty flight, made the fastest time of the day, doing a mile in 1.23.

Paulhan's appearance was made in his usual spectacular manner. He sneaked out of his tent and without the formality of bundling up before the grand stand, he sailed away up the back stretch, around the turn, and bore down upon the crowd in full career.

Curtiss again got off the ground for 1.125 mile in his 8-cylinder Rheims winner, going this distance in 1 min. 51 sec. Although he did some nice cautious flying, he lacked the brilliant daring of the Frenchman, who made three flights of 10¾, 4½ and 3¾ miles, the last at an elevation of 400 ft.

C. K. Hamilton in his Curtiss made a flight of 1¼ miles in poor time.

To the presence of Cortlandt Field Bishop, president of the Aero Club of America, is due some well advised and necessary changes in the prize list.

Knabenshue and Beachy brought out their dirigibles. The former had a brush with Paulhan in which the Frenchman easily passed him, going two feet to his one.

BALLOONS.

All ascents were made from Huntington Park, near Los Angeles.

The lack of interest in ballooning was disappointing, but was not to be expected, considering the distance to the grounds and the superior attraction of the aeroplanes. Clifford B. Harmon's beautiful Baldwin silk balloon "New York," 80,000 ft., made a short ascent with Geo. B. Harrison, aide, and four passengers to Colegrove, distance 12 miles.

Frank J. Kanne in the "Peoria," 40,000 cu. ft., followed, with J. C. Mars, aide, to Colegrove, distance 12 miles.

2nd Day, January 11.

The day opened with a gusty 20-mile wind which deterred all but Paulhan from venturing forth. He made three flights of 8¾ miles, 5 and 2½ miles, and although later Curtiss broke two world's records, the smiling Frenchman by his splendid work was the redeeming feature of a poor afternoon's program.

CURTISS MAKES WORLD RECORDS.

In the contest for rising in the shortest distance, Curtiss easily broke the old world's record by getting away in 98 ft. The best Paulhan could do was 191 ft.

In the contest for the quickest time in rising from the start of motor, Curtiss made a new record of 6 2-5 sec. from the first explosion of the engine. Paulhan's time in a Farman was 12 2-5 sec., and in a Bleriot 35 sec. Starting from line after engine was warmed up, Curtiss got off in 5 3-5 sec.

Willard made a beautiful descent in a trial for landing on a 20 ft. square, giving him 100 points.

Miscarol brought out one of the two cross-channel type Bleriots, but only succeeded in breaking a wheel after making ¾ of a mile in poor time.

Paulhan took the other Bleriot and managed to cover 2 miles in 5 min. 6 sec. Altogether the Bleriots have made a miserable showing thus far. Though beautiful pieces of workmanship, they were almost unmanageable owing to the disuse of the warping device (Wright suit) and the inexperience of the aviators with this machine, though Paulhan's showing in the strong wind was very creditable. Excepting Paulhan, the widely advertised Frenchmen seemed to be only mechanicians.

Hamilton, turning too low in a short flight, struck the ground and damaged his front control.

Prof. J. S. Zerbe's heavy multiplane proved too slow and heavy to get off the ground.

Edgar S. Smith, tuning up the motor on his Langley type machine, was struck on the head by the propeller and knocked unconscious.

55-MILE SPEED WITH PASSENGER.

Curtiss was the first to take up a passenger, carrying Jerome S. Fanciulli for a flight of a mile, his Aerometer registering the high speed of 55 miles per hour. On a second trip he carried C B. Harmon. The passenger seat is placed on the left side of the aviator, and while off center it appeared to make no difference in control. Paulhan made one passenger flight.

BALLOONS.

F. J. Kanne, M. L. McKeever and another, in the "Peoria," to Florence, distance 10 miles.

3rd Day, January 12.

The events are so arranged that there will be no fixed program for each day, but every day the aviators may try for any one of the prizes if they are ready with their machines and the weather is good.

PAULHAN MAKES NEW HEIGHT RECORD.

Paulhan was again the star, breaking all records for height. The figures of the engineering squad were 4,165 ft., while the aneroid on the machine read 4,600 ft. Paulhan was 43 min. 16 1-5 sec. in reaching this altitude, and but 7 min. 30 sec. in descending. This record was made with a new type Farman just assembled. The total duration of the flight was 50 min. 46 1-5 sec.

Curtiss, with Harmon's machine, made a record for the course of 2 min. 13 3-5 sec., only to break it with Willard's "Golden Flyer," which made it in 2 min. 12 2-5 sec. The best lap by Paulhan was 2 min. 25 3-5 sec. His 5-lap trial for the course was 12 min. 23 1-5 sec., unofficial by reason of the fact that judges had not been posted at the "pylons" to see that there was no cutting of corners.

Hamilton, after considerable engine trouble, got away, and after a circuit of the course took a short cross-country trip over the dirigible tents. Clifford B. Harmon got off the ground for about 100 ft. in a maiden flight on his Curtiss, of which he took delivery at Los Angeles.

The day was a tiresome repetition of the preceding one with the exception of Paulhan's high flight and a short passenger flight of the Frenchman.

BALLOONS.

C. B. Harmon, Geo. B. Harrison, aide, and five other passengers in the "New York," landed (after being towed) in the center of the aviation field. Distance 6 miles.

C. F. Willard, Geo. Duessler, and four others, in the new "Dick Ferris," 80,000 ft., landed at Santa Monica. Distance 18 miles.

J. C. Mars and two passengers, in the "Peoria," to near Palma, distance 10 miles.

4th Day, January 13.

In the 10-lap speed contest Curtiss beat Paulhan by only 5 sec. in the distance of 16.11 miles. Curtiss's time was 24 min. 54 2-5 sec.; Paulhan's was 24 min. 59 2-5 sec.

Willard took the honors for leaving the ground and stopping the machine in a 20 ft. square, showing fine control over his Curtiss.

PAULHAN CARRIES TWO OTHERS.

Paulhan again saved the day from being dull, his spectacular passenger flights taking the crowd's fancy. He carried up eight passengers in two hours, in one flight carrying two besides himself.

The remarkable effect of an aeroplane getting in the wake of another was well shown to-day. Paulhan cut in ahead of Curtiss during the latter's 10-lap trial, and Curtiss's machine was seen to drop like a stone in the downwardly moving air of Paulhan's wake.

BALLOONS.

J. C. Mars. K. L. Bernard and three others, in the "Los Angeles," 82,000 cu. ft., to near Burbank, 31 miles.

5th Day, January 14.

Paulhan again the whole show, making a 21¼ mile cross country flight over San Pedro harbor and return, and making a one-lap track passenger record of 2 min. 30 sec.

Chas. K. Hamilton made a course record of 3 min. 36 2-5 sec. in a trial for slowest time for one lap. Willard's slowest was 3 min. 11 1-5 sec.

Curtiss lowered his own one-lap track record, doing the lap in 2 min. 12 sec. Paulhan made the lap in 2 min. 21 1-5 sec. Willard made two laps in 3 min. 04 1-5 sec. and 3 min. 01 2-5 sec. respectively in the fast lap contest.

Hamilton in an altitude trial made 364.5 ft., up 12 min. 33 3-5 sec.; Curtiss, 247.6 ft.

To-day saw the first official circuit of the course in a Bleriot, Paulhan going the lap in 2 min. 48 sec. It was the only lap made by a monoplane during the meet.

Roy Knabenshue made a dirigible record of 5 min. 10 2-5 sec. for one lap, and in a race with the Beachy airship made it in 6 min. 29 3-5 sec.; Beachy in 7 min. 50 sec.

BALLOONS.

Geo. B. Harrison, alone, in the "Los Angeles," qualifying trip for pilot license. Distance, 3 miles.

6th Day, January 15.

Weather bad. Raining. Track heavy. Miscarol practising with one of the Bleriots broke one of the wings and severely damaged the chassis.

The only interesting event of the day was the brush between Paulhan and Hamilton during the latter's 10-lap trial in which the Frenchman with his more powerful motor easily passed Hamilton. Hamilton's time for the ten laps was 30 min. 34 3-5 sec.

Curtiss. Hamilton, Willard and Paulhan each made qualifying rounds.

The Knabenshue dirigible manœuvred at a height of 60 ft., dropping bombs in a 20 ft. square—though the lesson to be gained at this low elevation is problematical. He made one lap of the track in 5 min. 33 sec., and Beachy one lap in 5 min. 21 sec.

7th Day, January 16.

High wind and rain. Paulhan made several flights, one with two passengers, and also went after the record of Curtiss for short distance in rising, but best he could do was 118.3 ft.

Hamilton tried to beat Curtiss for quick start; his time was 9 1-5 sec.

Hamilton, Curtiss and Willard each made a flight and were deserving of much credit for attempting to fly in the strong wind with their light machines. A feature was Curtiss's terrific speed going with the wind.

The Knabenshue and Beachy airships, after attempting to buck the wind, gave up and went back to their sheds.

BALLOONS.

"Peoria," J. C. Mars and two passengers, to Boyle Heights, 9½ miles.

"New York," Geo. B. Harrison and two passengers, to Boyle Heights, distance 8 miles.

"Dick Ferris," Geo. Dressler and four passengers, to Sierra Madre, 13½ miles.

8th Day, January 17.

TWO HOUR FLIGHT.

But for a leaky gasoline tank, Paulhan might have to-day made a new American record for endurance. He had covered 75.77 miles in slightly less than two hours when he came down by reason of a leak in his gas tank. Total time in air, 1 hr. 58 min. 32 sec. Hamilton also tried for the endurance record, and had covered 12 laps, 19.45 miles, in 39 min. 00 2-5 sec., when it was seen that an upright on his machine had slipped from its socket and he was flagged.

Curtiss again went after the 10-lap record, cutting more than a minute off his old mark, doing the distance in 23 min. 43 3-5 sec.

Hillery Beachy made several short jumps in the Gill-Dosh machine, but lacked skill in raising from the ground.

Masson, one of the foreigners, tried out a Farman, and with a little more practice should be able to cover the course.

Paulhan, for the first time, tried his hand on an American machine (Willard's Curtiss), but did not succeed in making more than jumps.

BALLOONS.

J. C. Mars, in the "Dick Ferris," with three passengers, to Moneta Ave., three miles.

9th Day, January 18.

HOUR FLIGHT CROSS COUNTRY.

Paulhan's magnificent 45¼ mile cross-country flight to Santa Anita race track and return was naturally the greatest event of the week, arousing enthusiasm admixed with awe that eclipsed that on the day of his high flight. It was wonderful to see him gradually growing smaller and finally disappear against the white of snow on the background of mountains. His return was equally awesome from the time he was a tiny dot, high in the air above the mountains, till the moment of his landing. It was the supreme happening of the meet. Elapsed time, 1 hr. 2 min. 42 4-5 sec.—within 17 1-5 sec. of the Cody record. Distance each way, 22½ miles. Greatest height 600 meters, or 1,988.8 ft. Engine behaved well. Paulhan viewed the country as he flew, using field glasses.

Short flights by the other aviators completed the day.

Trials for rising in short distance: Curtiss, 148 ft. 9 in., 114 ft. 6 in.; Hamilton, 154 ft. 9 in.

BALLOONS.

J. C. Mars and two passengers in the "Peoria" to Boyle Heights, 6 miles.

Geo. B. Harrison and C. F. Willard, in the "New York," to Aviation Field, 9 miles.

10th Day, January 19.

*Paulhan broke the world's record cross-country passenger flight to-day, taking Mme. Paulhan a distance of 21¼ miles for the round trip. Elapsed time, 33 min. 45 2-5 sec., leaving Aviation Field and circling over Redondo and Hermosa Beaches.

Later he carried C. B. Harmon in same direction; distance about 17¾ miles. Track passenger flights did not equal his previous record.

Lieut. Paul W. Beck, of the Signal Corps, who was ordered to attend and report on the flights, was taken up with Paulhan for three circuits of the course, and an attempt made to throw bombs in a 20 ft. square at an altitude of about 250 ft. First bomb went 58 ft. over square and 47 ft. to right. Second went 113 ft. over. A third fell 66 ft. to the right of a line. Lieut. Beck had worked out a table on the distance before target that the bombs should be released, but in the calculations he had figured on the machine going at a higher speed than it did.

In trials for height Hamilton took honors, making a daring ascent of 530.5 ft. in 8 min. 04 2-5 sec.; in a second flight he went up to 455 ft., up 14 min. 53 2-5 sec. Hamilton tried again for endurance, but came down after 6.02 miles; up 11 min. 01 1-5 sec. In the one lap speed contest his time was 2 min. 47 2-5 sec.

Knabenshue and Beachy in a closely contested dirigible race, made new records for the course. Knabenshue, 5 min. 05 sec.; Beachy, 4 min. 57 4-5 sec.

After flying the new Gill-Dosh biplane more than a mile and a quarter, Hill. Beachy descended too abruptly and partially wrecked the beautiful machine. It was his first real flight, and he did very well, considering.

BALLOONS.

J. C. Mars and five passengers, in the "Dick Ferris," 80,000, to Moneta Ave., 4 miles.

Geo. B. Harrison and three passengers, in the "Los Angeles," to Boyle Heights, 7 miles.

F. J. Kanne and two passengers, in the "Peoria," to near Huntington Park, 2 miles.

11th Day, January 20.

CURTISS MAKES 1 HR. 24 MIN. FLIGHT.

Curtiss on this, the last day of the meet, regained somewhat the good will of the audience, which had somehow, in the light of Paulhan's superior performances, grown a bit cold in its enthusiasm. Curtiss had made 33 1-5 laps (53.38 miles) in 1 hr. 25 min. 5 sec., when a broken rib on the machine forced him to descend, leaving Paulhan still flying. The Frenchman covered forty laps in 1 hr. 49 min. 40 4-5 sec., when darkness compelled him to descend. Curtiss lapped him several times.

Hamilton proved the most nervy of the Curtiss operators, ascending in a height trial to 754.6 ft., and then started out on an unofficial cross-country flight to Gardena and back, about 6 miles. On returning, his crankshaft fortunately broke when nearly in the grounds, and he glided from a height of about 200 ft. into the field, landing safely after a flight of 25 min. 30 sec.

Willard and Masson each made a flight, the latter in the old Farman.

BALLOONS.

Clifford B. Harmon and Geo. B. Harrison, in the "New York," in a trial to set an official altitude record for Southern California, 11,100 ft. Descended at S. Hollywood. Distance 8 miles.

Prizes.

Prizes announced as awarded by the judges are:

FOR HEIGHT.

*$3,000—Louis Paulhan, 4,165 ft., 1st.
$2,000—Chas. K. Hamilton, 626 ft., 2nd.
$500—Not awarded.

ENDURANCE AND TIME.

$3,000—Louis Paulhan, 75.77 miles, 1 hr. 58 min. 32 sec., 1st.
$2,000—Glenn H. Curtiss, 37.05 (12 pylons) miles, 1 hr. 25 min. 05 sec.
$500—Chas. K. Hamilton, 19.44 miles, 39 min. 2-5 sec.

SPEED, TEN LAPS.

$3,000—Glenn H. Curtiss, 16.11 miles, 23 min. 43 2-5 sec., 1st.
$2,000—Louis Paulhan, 16.11 miles, 24 min. 59 2-5 sec., 2nd.
$500—Chas. K. Hamilton, 16.11 miles, 30 min. 34 3-5 sec., 3rd.

THREE LAPS, WITH PASSENGER.

$1,000—Louis Paulhan, 4.83 miles, 8 min. 16 1-5 sec.
$500—No others contested. Not awarded.

FASTEST LAP.

$1,000—G. H. Curtiss, 1.611 mile, 2 min. 12 sec., 1st.

SLOWEST LAP.

$500—Chas. K. Hamilton, 1.61 miles, 3 min. 36 2-5 sec.

QUICKEST START FROM FIRST EXPLOSION.

*$250—Glenn H. Curtiss, 6 2-5 sec., won.

START IN SHORTEST DISTANCE.

*$250—Glenn H. Curtiss, 98 ft., won.

STARTING AND LANDING IN SQUARE.

$250—Chas F. Willard won.

CROSS-COUNTRY.

$10,000—Louis Paulhan, 45¼ miles, 1 hr. 0 2 min. 42 4-5 sec., won.

RECORDS FOR COURSE.

*Height, 4,165 ft., Louis Paulhan, January 12.
Distance, 75.77 miles, Louis Paulhan, January 17.
Endurance, 1 hr. 58 min. 32 sec., Louis Paulhan, January 17.
Speed, ten laps, Glenn Curtiss, 23 min. 43 3-5 sec., January 17.
Speed, one lap, Glenn Curtiss, 2 min. 12 sec., January 14.
Speed, three laps, with passenger, Louis Paulhan, 8 min. 16 1-5 sec., January 13.
Slow speed, one lap, Chas. K. Hamilton, 3 min. 36 2-5 sec., January 14.
*Shortest distance in rising, Glenn Curtiss, 98 ft., January 11.
*Shortest time in rising, Glenn Curtiss, 6 2-5 sec., January 11.
Cross-country, Louis Paulhan, 45¼ miles.
Dirigibles, one lap, Lincoln Beachy, 4 min. 57 4-5 sec., January 19.
Height for dirigibles, Roy Knabenshue, 1,656.9 ft
Height for balloons, Clifford B. Harmon, 11,100 ft.

* New world records.

Judges.—Cortlandt Field Bishop, chairman; H. La V. Twining, vice-chairman; Lieut. Paul W. Beck, M. C. Neuner, Dick Ferris, William Stevens, A. L. Smith, G. B. Harrison, W. H. Leonard, secretary and statistician. Timers, Whitley Jewelry Co.

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A LAYMAN'S VIEW OF AERIAL LAW

By J. C. Howell.

(WARNER INSTRUMENT CO.)

WE have observed a good deal of comment in various papers as to the respective rights of aeronauts or aviators, and of the owners of real estate over which they may pass in flight. We would welcome a careful discussion of this subject, and to introduce it would like to offer these suggestions for your consideration. Coming as they do from a layman, they may seem unsophisticated to a lawyer, but if they evoke comment from some interested member of the legal profession they will serve their purpose.

With the exception of certain laws relating to mining properties in a few localities, we understand that ownership of the surface of the earth includes ownership above and below the surface to an indefinite extent. Any rights that apply to the surface apply equally above and below it. The courts of common law recognize every trespass as a violation of a property right, but refuse to award other than nominal damages where no actual damage is inflicted. Thus, if a property owner finds that a stranger is in the habit of crossing a corner of his property without doing the least harm, he may sue in a court of common law and recover nominal damages. A repetition of the offence will enable him to sue again with the same result. In this way his property right is established beyond question, but no sufficient remedy is afforded. Therefore a court of equity will take jurisdiction in such a case, and grant an injunction restraining the trespasser from repeating the offence, recognizing the fact that the property owner is entitled to the quiet enjoyment of his land without being disturbed in it or obliged to bring repeated actions to secure immunity from molestation.

If this is a correct statement of affairs, it would seem that action might be brought against an aeronaut who had driven his machine above the property, and nominal damages collected. But is it not probable that an action brought in a court of equity to restrain an aeronaut from flying over the property would be met with the objection that as no injury was threatened or likely to result, no injunction would be granted?

There is of course a possibility that articles dropped or thrown from a machine passing overhead might do damage to person or property, but this is a danger that threatens equally all public property and all persons in it. Against this danger adequate safeguards can perhaps be found. It might be sufficient to require the registration of every apparatus capable of making a flight, and a report of the starting and finishing point as well as the time of each flight. By some such means, it would be possible to identify an individual who caused actual damage, and the common law courts already provide a sufficient remedy. We realize that these suggestions are extremely crude, and offer them, as first stated, only to elicit a discussion of the subject from gentlemen who are familiar with the technicalities of the problem.

CLUB NEWS

Aero Club of Michigan Formed.

BY C. B. DU CHARME, SECRETARY.

THE Aero Club of Michigan was given its first impetus by a meeting held July 10, 1909, for the purpose of considering ways and means of effecting a temporary organization. On this occasion 43 signified their intention of becoming members.

For several months nothing further was done, although by no means did this apparent lapse into inactivity indicate that the idea of forming an aero club had been abandoned by the early enthusiasts.

All that was needed to revive the project with greater enthusiasm than ever was the proper stimulus. This was to be furnished by a promised visit to Detroit of the Wright Brothers.

On the evening of December 16 it was found that the above-mentioned gentlemen would be in the city and had consented to attend the meeting of the Aero Club.

Needless to say, the attendance of these gentlemen lent additional interest and enthusiasm to the gathering. F. S. Lahm favored us with a talk on free ballooning and illustrated same with a series of stereopticon views.

With their characteristic reticence both the Messrs. Wright declined to make speeches. At the conclusion of the meeting 57 of those present signed as charter members.

The net result of this gathering was the formation of a temporary organization looking towards a permanent one and an immense amount of enthusiasm aroused.

A few days after articles of association were adopted and the following officers and directors chosen: R. A. Alger, president; Wm. E. Metzger, vice-president; Winthrop

Withington, vice-president; R. D. Chapin, treasurer; C. B. Du Charme, secretary.

Plans are now being considered whereby a balloon station will be established in the early summer. Owing to the unfavorable location of Detroit in its proximity to the great lakes, it was deemed advisable from a standpoint of safety to establish a station for ascensions at some point in the state centrally located. At present both Jackson and Lansing, the state capital, are warm rivals for the honor.

The purchase of a four-passenger balloon is also being considered, the contract for which will be placed some time the latter part of this month.

While, of course, for the first year at least more of the activities of the Aero Club of Michigan will be devoted to balloon ascensions by the members, the aeroplane will by no means be neglected.

President Alger has already placed his order with the Wrights for the first aeroplane of their design that will be delivered to the public. Needless to state, Mr. Alger's flights will be of great interest to the members.

In addition to the above there is a plan already under consideration by several members looking towards the formation of a syndicate to purchase an aeroplane. However, at this early date, particulars as to make and type of machine and members of the syndicate must of necessity be withheld.

To those of us who are more closely in touch with the club and its plans, in which positions we are able to judge of its future as indicated by the enthusiastic support with which it is meeting, there are none but the brightest predictions which can be made for the success and growth of the Aero Club of Michigan.

The **Aeronautic Society** has now established itself permanently at 1999 Broadway, New York, entrance just west of Broadway, on 68th St., and meetings will be held weekly again. Two each month will be informal gatherings, while on the second and fourth Thursdays there will be the regular formal meetings, with lectures and talks.

Hudson Maxim has been nominated for the new head, as, according to the by-laws no president can serve more than two years in succession. The other officers will be Lee S. Burridge, William J. Hammer, Louis R. Adams, Wilbur R. Kimball, C. F. Blackmore and Alva D. Lee, who will serve as assistant secretary. The board of directors also includes Thomas A. Hill, Dr. Lee De Forrest, Carlos De Zafra, Hugo C. Gibson, Dr. Dwight Tracy and Chas. W. Howell, Jr.

As usual, there was a large attendance at each of the past two meetings. On January 27 the evening was well filled with illustrated talks by Messrs. Orrel A. Parker, Wilbur R. Kimball, H. C. Brokaw, Hugo C. Gibson and E. L. Jones. On February 10 an interesting talk on his association in the work of Lilienthal was given by Greeley S. Curtiss. Frank Van Anden gave his experiences with his aeroplane and aerial-propeller-driven "scooter." W. Morrill Sage talked on model building.

The Curtiss aeroplane, belonging to The Aeronautic Society, flown by Charles F. Willard, having been disposed of, Mr. Willard has secured another Curtiss machine for exhibition work.

GROUNDS ON LONG ISLAND.

A lease is waiting to be signed by the Garden City Co., granting to the society a space on the Hempstead Plains adjoining, on the east, the Mineola fair grounds, with the privilege of flying over the Plains. This is where Curtiss and Willard made their flights while at Mineola. Until sheds can be erected, the one at Krug's Corner will be used.

The **Aeronautic Society of Canada,** which has its headquarters at Toronto, is going strong. It has now established a circulating library of books on the art for the use of its members, and it is doing this without charge for the loan of the books. But if a volume is retained by a borrower beyond the loan period, which is a week to three weeks, a fine of one cent for each day over the allowed period is inflicted.

This is an example that other bodies might well follow. Its great service is that it puts at the call of members many volumes which are now out of print, and practically impossible to obtain. It also enables them to examine new books to discover whether they are worth purchasing.

The Aero Club of the Y. M. C. A., of White Plains, N. Y., has been formed with the following officers: Harold Z. Carpenter, president; O. Guernsey, secretary; Bertram Hendrickson, treasurer. A glider is now being built and several model aeroplanes.

The **Aeronautic Society of New Jersey** was formed at an enthusiastic meeting at the rooms of the New Jersey Automobile and Motor Club on February 10. The new organization will be a regularly incorporated body and have complete management of its own affairs and elect its own officers. This is to be known as the Aviation Section of the automobile club. Dues $15 a year; for members of the automobile club dues are but $10.

Wilbur R. Kimball addressed the meeting, giving an illustrated lecture on aeronautics, showing moving pictures, as well, of the recent aviation meetings. At the conclusion of the lecture the plans of the society were announced and a goodly number joined and the prospects are fine for a healthy growth. One of the members has already offered the use of a very large open space and will erect as many sheds as may be necessary to house machines. Many of the 2,000 members of the automobile club are already building machines in and around Newark. The organization committee is composed of C. E. Fisher, F. E. Boland, J. F. Lanier, A. B. La Massena and W. R. Kimball. W. Clive Crosby is president of the automobile club.

The **Rochester Aero Club** listened on

February 2 to a lecture by Carlos De Zafra on "Aeronautics." At the meeting Charles H. Ocumpaugh's offer of a silver cup was announced by the secretary. This is given to the man making the first flight from Cobb's Hill to a point in Monroe County to be determined upon. L. J. Seeley, of the Elbridge Engine Co. reported on his visit as a delegate to the convention in St. Louis and said the prospects were good that the next convention would be held in Rochester. He has ordered a large balloon, 80,000 cu. ft. capacity.

The Aero Club of America will hold its fourth annual dinner at the St. Regis on March 24. The two international trophies held by an American balloonist and aviator will be displayed on that occasion and the presence of the two champions is expected.

A new aero magazine, called "Aircraft," is shortly to be started in New York by A. W. Lawson, the former editor of "Fly." This will have, in a way, the backing of the Aero Club, it is expected, as the club's paid assistant secretary, Charles Heitman, is interested financially in the project.

Aero Club of St. Louis. What was almost, but not quite, the annual re-election of officers of the Aero Club of St. Louis, took place on February 3. The only newcomer among the officers is Eugene Cuendet, honorary secretary, who has been elected to take the place of Albert Bond Lambert, who accepted the office of first vice-president after refusing the presidency. L. D. Dozier was re-elected president; G. H. Walker, second vice-president; D. C. Nugent, third vice-president, and H. N. Davis, treasurer. J. W. Kearney resigned as working secretary. His successor had not been appointed on February 5.

The club voted to Company A, Signal Corps, National Guard of Missouri, the sum of $200 for equipment.

At the annual meeting of the **Aero Club of Washington,** which was held January 10, after the election of officers, a resolution, to be presented to the President of the United States, was adopted, as follows:

"The Aero Club of Washington very respectfully requests the President of the United States to recommend that Congress take steps this year toward the systematic development of an aeronautical establishment proportionate to those of other nations."

The Secretary of War, in his last report, did not ask Congress for an appropriation for aviation experiments, but the Secretary does summarize the opinions of prominent military authorities on the question in the salient points.

"But," says the Secretary, "whatever may be the influence of aerial locomotion upon the art of war, whether or not it will ever prove a valuable auxiliary to armies in the field, the fact must be recognized that all first-class powers, except the United States, are providing themselves systematically with aerial fleets, Germany and France being notably in the lead."

TRADE REPORTS RAPID GROWTH

GOODRICH CO. MAKES AERO TIRES.

The B. F. Goodrich Company, of Akron, O., have established an Aeroplane Accessories Department to handle the demand for tires on aeroplane wheels. The Goodrich Company established an enviable reputation in the old bicycle days, progressed through the automobile stage, until now the flying machine demands rubber shoes. If boats wore (?) tires the Goodrich Company would make them, too. Nothing more to conquer!

NEW CURTISS AGENTS.

The Frank H. Johns Mercantile Co., of San Francisco have taken the California agency for the Curtiss aeroplane, having placed an order for eight machines.

E. Henry Wemme, of Portland, Ore., has taken the Oregon agency for the Curtiss machine and engaged George W. Kleiser as demonstrator.

An observer of Charles K. Hamilton's flight in a Curtiss machine with the rear vertical rudder tied, steering with the "wing tips," only states that the aviator had "perfect control" of the machine. This experiment was made to offset the argument of the Wrights that the rudder must be moved in conjunction with the use of the wing tips on the Curtiss machine, thereby infringing one claim of their patent.

Jerome S. Fanciulli, sales manager of the Curtiss aeronautical department, is authority for the statement that in the near future a long-distance 8-cylinder aeroplane will be put out.

A new and enterprising firm, Lockhart & Doty, 1777 Broadway, New York, have entered the aeronautic field and will do general publicity, advertising and have established a booking agency, and will make bookings with a number of aviators for exhibtions at aviation meets, fairs and amusement enterprises for the coming season. They have a number of letters on file from promoters of fairs, amusements, etc., and also from a number of cities inquiring about aviators and machines for exhibition purposes the coming season.

Lockhart & Doty have recently taken up aeronautics, and will devote all their time to this work. They were formerly connected and are well known in automobile circles, Mr. Lockhart having had a long experience with the Berliet in New York City and the Autocar in Brooklyn, while Mr. Doty has been in touch with the racing game, having been connected with Senator W. J. Morgan, the well-known automobile race promoter and automobile writer.

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If you desire to learn what the Society has done for the Art in the last eighteen months, send for the brochure just published reciting the accomplishments from the formation of the Society in July, 1908, to December, 1909. It is practically a history of aviation in the U. S. during the above period.

For the purpose of increasing the sphere of usefulness the membership should be augmented. Every additional member advances the general good.

¶ Address the Secretary for booklet and application blanks at P. O. Box 28, Station D, New York; or 1999 Broadway, where weekly meetings are held.

Through a misunderstanding we stated last issue that Seguin & Co., St. Louis, were agents for the Farman and Bleriot machines. Seguin & Co. wish to make public the fact that this was erroneous.

WARNER AEROMETERS ON CURTISS MACHINES.

The Warner aeroplane, which has been on exhibition at the Philadelphia automobile show, coming there from the recent Corn Show at Des Moines, goes next to the Buffalo Automobile Show, February 14-19, thence to Cleveland, February 21-27; Pittsburg, March 26 to April 2, returning to the Warner factory at Beloit for further flights. All the Curtiss aeoplanes in the future will be equipped with Warner "aerometers."

STEVENS SELLS TWO BALLOONS.

J. H. Wade, Jr., of Cleveland, has purchased an 80,000-cu. ft. balloon of A. Leo Stevens. This new aerostat will be built of Continental fabric and will be the only balloon in this country built of this material.

The Aero Club of New England has purchased another new balloon of 1,600 cu. m. capacity to be called the "Boston II," from Mr. Stevens.

SHNEIDER MOTOR EXCHANGE.

Fred Shneider is getting out a catalogue of aeroplanes and supplies. He is to establish an exchange for motors and accessories, will build full-sized machines or models and undertake in general all work connected with the building of machines. Several orders are now on hand.

He is building a new machine for himself of the biplane type fitted with wheels instead of skids, which he has used thus far.

FACTORY IN SEATTLE.

Hamilton & Palmer, of 212 32d Ave., Seattle, have gone into the business of building gliders and aeroplanes for the market.

BOSCH MAGNETOS AT LOS ANGELES.

All the records at Los Angeles were made by Bosch equipped aeroplanes.

The magnetos used by the various machines were as follows: One Curtiss (8-cylinder engine), Bosch Magneto "DR8"; two Curtiss 4-cylinder machines, Bosch Magneto "DU4"; two Farman biplanes driven by 7-cylinder rotary engines (Gnome) equipped with Bosch Magnetos of the "FN" type.

Dirigible belonging to the U. S. government was equipped with Bosch Magneto "DAV," as was the Lincoln Beachy dirigible.

The 3-cylinder Bleriot which won no prize was battery equipped.

Not one Bosch equipped flying machine carried a battery; and they all started easily, made fine showings and had not the slightest ignition trouble during the whole meet.

At Rheims the four great prizes were won by Bosch-equipped aeroplanes. Curtiss took the Gordon-Bennett cup and the Prix de la Vitesse, while Farman with his Gnome motor, which is Bosch-equipped, captured the Grand Prix de la Champagne et de la Ville and the Prix des Passagers.

Of the 20 contestants in these four contests, the motors of eight of the aeroplanes were equipped with Bosch magnetos, seven with batteries and six with other ignition apparatus.

At the Brescia meet, Curtiss won the Grand International Prize de Brescia and another minor prize, while Calderara, with his (Italian) Wright, Bosch-equipped biplane, captured four prizes. In other words, six of the nine events were won by aeroplanes equipped with Bosch magnetos, and these contests included prizes for starting, passenger carrying, circling, high flying for the day and other special prizes for the varying lengths. The results show that the Bosch ignition was found efficient and serviceable in all sorts of contests, and under greatly varying conditions.

In both these meets it is interesting to observe that the Bosch magneto was the ignition most favored, while the use of batteries was next in popularity; but not a single prize was won by an aeroplane which depended on batteries, and of the 13 prizes of the two meets, 10 prizes and trophies were won by aeroplanes equipped with Bosch magnetos, the other 3 prizes being won by Rougier with a Voisin aeroplane with Gibaud equipment.

REQUA-GIBSON PROPELLERS.

The Requa-Gibson Company is turning out some of the finest looking propellers we have seen. The company carries now in stock three sizes: 6-ft., 7-ft. and 8-ft. diameter, of 4-ft. and 6-ft. constant pitch. These are made of laminations of ash and mahogany, or ash and spruce. The 6ft. diameter 4-ft. pitch propeller is guaranteed to deliver 200 pounds thrust at 1,200 revolutions; and more or less as speed varies. The above result was obtained with about 22 h. p. Propellers will be built on order for any given horsepower, diameter and pitch.

The Requa-Gibson motor is going through all the setbacks peculiar to a highly developed organism. The company announced some time ago that it would sell the new motor only on the condition that it would show its stated brake horsepower on a dynamometer. Several attempts have been made to test the motor on the Automobile Club of America's dynamometer but each time the coupling between the motor and the meter gave way, owing to the slowness of the dynamo in accelerating. As the dynamo has been shipped away it is problematical when an official test can be made.

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In the meantime the company is proceeding with tests with such absorption means as are available for the purpose.

It is noteworthy that the test engine has been subjected to abnormal abuse in the way of mechanical strains without in any way showing harmful effects. The company may consider dropping the motor from the steenth floor to demonstrate its absence of fragility in aerial smashups (?).

STEVENS FACTORY TAKING UP AVIATION.

W. Morrill Sage, who has lately entered into the construction of aeroplane models for sale, will take charge of the construction of aeroplanes and models at the Stevens works. Those desiring to experiment might do well to have models of their apparatus constructed first. Mr. Sage's work is displayed to good advantage in the flying models he has built. Many models are now being built for exhibition at the Boston show.

CONSTRUCTION CO. IN WASHINGTON.

To meet the growing demand for aerial vehicles of all sorts, the National Air-Craft Construction Company has opened an establishment where the mechanical end of aerial work can be done promptly and satisfactorily. The company has secured the services of Mr. Chas. B. Nichols, formerly one of the assistants to Prof. S. P. Langley. Mr. Nichols is a practical man, and has followed the development of aviation for twenty years past. He was the first man in the work to make a laminated wood propeller, and, since leaving the Smithsonian, he has been called upon by numerous aviators to design and make propellers. He is an expert in this line, and his services are at the disposal of any of the patrons of the construction company.

Work has already been commenced at the workshop of the company on a man-carrying machine, and there are two other machines contemplated.

It is the aim of the company to furnish not only complete machines, but to aid constructors in every way. The company can secure on the shortest possible notice anything that is wanted in the way of aeroplane hardware, fabric, varnishes, wire and cable and flawless wood for construction.

NOTE

The cartoon feature has been necessarily omitted this issue for lack of space; also section covering aeroplanes on the Coast, and several other interesting and valuable articles.

EXCHANGE AND FORUM

WANTED—A lightweight motor suitable for aeronautical purposes. Give lowest price possible. Address F. W. Williams, 244 Logan Ave., Winnipeg, Can.

WANTED—To buy one more flying machine or will furnish money to right party to build same. C. W. Parker, Abilene, Kansas.

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PROPELLER OF WILLARD'S CURTISS.

To Inquirer—Every one has been different. The one used at Los Angeles had a diameter of 6 ft., pitch of 17 degrees taken 1 ft. from tips. Width of blade 6⅞ ins. Very slightly concave on working side of blade. Spruce, 11 pieces, laminated. This was more of a constant angle blade than a true screw. It gave about 165 lbs. standing thrust at around 1,115 rev. per minute. In climbing the engine slows down, while in descending the engine speeds up. Hence, in the air the engine probably does as well as 1500 r. p. m.

AN OPEN LETTER TO THE AERO CLUB OF AMERICA.

Mr. Augustus Post, Sec'ry
The Aero Club of America,
New York City.

Dear Sir:

For two years, or more, prior to the first of last November, I was considering the advisability of resigning as a member of the Aero Club of America, as I could not see where I was receiving any benefit whatsoever.

Here was a new industry springing up with leaps and bounds, and the membership of the club at a standstill, if not actually falling off. I received letters at times asking my assistance in increasing the membership. I could not see my way clear, however, to ask my friends to pay their good money for a "gold brick"; my only reason for remaining being the forlorn hope of a change in the administration. I was very sorry when the most progressive members broke away and organized The Aeronautic Society, for I realized that while the latter Society had the advantage in brains and energy, the Aero Club had a big asset in their affiliation with the foreign clubs, so I was in hopes the two would finally amalgamate. This was not to be, however. As it has been claimed that minority members, or "rebels," in the recent election were all members of The Aeronautic Society, I wish to state that I, for one, am not a member of that society, but undoubtedly *will be* in the not distant future..

On November 1, 1909, I attended that memorable annual meeting and voted with the minority. In a private conversation with one of the other members before the meeting came to order I was nearly convinced that it might be well to vote the regular ticket, but I was not long left undecided after the meeting was called to order (?) and the gag rule methods for holding control were brought out; they would have been a disgrace to any organization.

And then the utter sense of ingratitude exhibited, when it was tried to pass a vote of censure against the best and truest member that you have; a man who has worked harder for the club than any other member; the one who succeeded in getting Messrs. Wright and Curtiss to agree to

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make the Hudson-Fulton flights. And I have no doubt that the motion would have passed had not one true man stepped forward and made an unanswerable and irresistable speech against it. It is an old saying that every man has some lingering sense of decency left in him and Mr. Beck dug right down to the core and tapped what little there was, so the only thing remaining was to table the resolution and make up for this slip by becoming more insolent and arrogant than ever.

The next day being a holiday I postponed writing my resignation until the day following, as the letter would reach you just as quick. I then sent you the following letter:

"New York, November 3, 1909.
"Mr. Augustus Post, Sec'ry,
"Aero Club of America,
"New York City.

"Dear Sir:

"Please accept my resignation as a member of "the Aero Club of America, to take effect at once.

"Yours very truly,
"HARRY E. DEY."

What was my surprise about two weeks later to receive the following reply:

"November 16, 1909.
"Harry E. Dey, Esq.,
"52 William Street,
"New York.

"Dear Sir:

"Your resignation from the Club, dated Novem-"ber 3d, has been received, but in accordance "with the By-Laws it is impossible to accept same, "as your dues for 1910 were payable on Novem-"ber 1st, and you are therefore not in good stand-"ing. If you will kindly mail us your check for "the amount due, twenty-five dollars, your resig-"nation will be promptly acted upon.

"Very truly yours,
"CHAS. HEITMAN,
"Assistant Secretary."

In reply to this, I wish to say, that if my dues were payable November 1st, as you state, then the club had no right to increase the dues for the present fiscal year, making it retroactive as it were and giving nobody a chance to resign. I refer to those that did not care to pay the 150 per cent. increase; nor, did others that were not classed among the rebels fare better. Were their resignations accepted without question?

How about those that paid their bill promptly on the first of November; after obtaining a receipt for 1910 dues. Were they called upon to ante up again? And how could they be compelled to pay more, after getting a receipt in full? If not, will one set of members pay $10.00 for their 1910 dues while the rest pay $25.00? Why not go back still farther and increase the dues now for 1909?

The By-Laws expressly state that the dues shall be ten dollars per year, and that a *maximum* assessment of *ten* dollars a year may be made by a two-thirds vote at any meeting called for that purpose.

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Did the call for this meeting say anything about the increase in dues? Was there a two-thirds vote? Who can say how many Ayes and Nos there were, when they were all called out at once? Nobody in that room could swear positively that two-thirds favored the increase.

Has any member ever received official notice of the proceedings of that meeting? I, whom you appear to still consider a member (but the good Lord forbid) have not received anything beyond your nervy letter above quoted, and two or three relating to medals, shows or something of that nature that has passed my memory.

To sum up.—The changes in the Constitution relating to the increase in dues made by Ayes and Nos votes were unlawful; and even if they had been lawfully passed they cannot be made effective until November 1, 1910.

You may wonder why I am making this letter public. The reason is simple. According to your letter I cannot honorably resign from the Aero Club of America without first submitting to deliberate highway robbery. As my spine is not of the composition that Mr. Lawson so graphically applies to the public, I do not propose to stand and deliver, and at the same time, as I value my good name I desire to let the public know why I leave the Aero Club in bad odor; I want them to know where the odor comes from.

Yours,

HARRY E. DEY.

To Inquirer.—For glider described in Mr. Tandy's pamphlet, we suggest No. 18 Piano wire. For the joints, 1-32 in. galvanized iron or tin. It would not be possible to install a motor in such an apparatus and fly.

FOREIGN LETTER.

(*Continued from page 103*)

Germany.

ZEPPELIN POLAR EXPEDITION.

The plan to start for the North Pole with a Zeppelin airship seems to be forming in a concrete way. Prof. Hergesell says in June or July two steamers will be chartered to proceed to headquarters at Spitzbergen and will remain there, to be used later as floating stations. From there to the North Pole is a distance of 1,200 kil., and this could be accomplished with favorable winds in 35 to 40 hours. The chief object is not to reach the Pole, but scientifically to explore the polar regions, taking soundings and surveys of the stretch between Greenland and Franz Joseph Land, etc. One of the two special Zeppelins will remain at Spitzbergen, and be sent out only if called upon by wireless telegraphy to aid the exploring vessel. The crew will consist in all of twelve persons, although the Zeppelins could well carry 25. Should the German government not find itself in a position to guarantee all expenses, as is firmly believed will be the case, then Prince Albert of Monaco will pay. The cost of the expedition will be $750,000 or thereabouts. Prince Albert will accompany the party in any case.

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References: U. S. Representatives.—Thistlewood, Wiley, O'Connell, Groff, Morrison, Sam'l Smith and others. Bruce Mfg. Co., Clean Sweep Co., Heckman Fish Trap Co., Northern Spike Co., Yankee Tweezer Co., Twentieth Century Hinge Co.

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Gray Lithograph Co., New York City, N. Y.
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Should Flying-Machines be Handicapped?

AMONG the conditions governing an important prize competition which is to take place this year there may be found the following:—"*The flying-machine must be able to rise from the ground under its own power and without the aid of any special starting apparatus.*"

Such a condition is a handicap upon speed and it tends to seriously retard the development of the flying-machine.

The wheeled flying-machine is good for sporting purposes, starting and stopping on selected ground, and it is good for nothing else.

The time has certainly come when the designers of flying-machines should look beyond the realm of sport and consider the practical uses to which it may be possible to adapt the machine.

The dynamic flying machine has two, and only two, qualities which seem likely to fit it for use as a carrier: first, its independence of roads; second, speed superior to that of railway trains.

The supporting power of an aeroplane increases approximately as the square of the velocity, it is therefore certain that the efficient fast flying-machine of the near future will be designed with much smaller areas of sustaining surface per pound of total weight than those now in use. Such a machine will require a higher initial velocity than can safely be obtained by running over ordinary ground.

Rapid running on the average field puts dangerous strains upon the stays of the machine.

One of the most frequent causes of trouble and disappointment to aviators is unsuitable ground.

A machine designed for cross country flying must be dependent upon suitable ground or else upon launching stations. The former is difficult to find and even when found the question of trespass must be considered.

For military purposes the wheeled machine is useless unless some means can be devised for carrying a parade ground into the battlefield. Portable launchers must form a part of the equipment of an army.

When the requisite high initial velocity is given by a well-designed launcher the flying-machine runs smoothly into the air.

As these machines become more common, aeroplane sheds will increase in number, and these may be provided with launching apparatus at moderate cost. The aviators will need garages just as motorists do.

With launching stations not more than twenty-five miles apart it will not be a great undertaking to fly from one to another.

In the present state of the art a flying-machine cannot be considered marketable unless it can fly at least twenty-five miles with a reasonable degree of certainty.

For the High-Speed Flying-Machine a Revolvable Launcher is A NECESSITY

I would ask the designers of flying-machines to read the description of the **James Means Launcher,** to be found on the third page of cover of the January, 1910, number of this magazine.

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HAVE WON EVERY CONTEST ENTERED AGAINST ALL MAKES

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Aero Club Grounds, Centennial Contest, St. Louis, Mo.

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AERONAUTICS

THE AMERICAN MAGAZINE
OF AERIAL LOCOMOTION

VOL. 6
NO. 4.

APRIL, 1910

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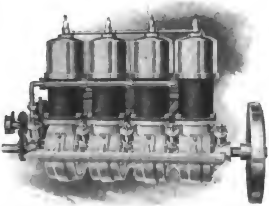

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What it is.—The Bowden Wire Mechanism consists of but two parts—a closely coiled and practically incompressible spiral wire, constituting what is termed "the outer member," and a wire cable, practically inextensible, threaded through the above and termed "the inner member."

What it does. Previous to the introduction of the Bowden Mechanism the usual mechanical method of transmitting power in other than a straight line was by means of angle levers and rods, cables and pulleys, and other such devices, all of which necessarily involve considerable complication, besides increased labor and expense in adapting them satisfactorily to the user's requirements. The Bowden Wire Mechanism dispenses with all these difficulties, while enabling power to be transmitted by the most tortuous route. The mechanism is complete in itself, and requires only that one member shall be anchored to a stop at each end, and that the other member shall be attached to an operating lever at one end and to the object to be moved at the other.

¶ The opportunities for the use of the Bowden Wire Mechanism are practically unlimited, and in every case its employment is accompanied by decreased cost of actuating mechanism, simplicity, instantaneous operation of actuated parts [due to absolute lack of lost motion] and reliability.

¶ The Bowden Wire Mechanism may be adapted to impart either a pulling or pushing movement.

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Respectfully,
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PROPELLER EFFICIENCY

By Henry S. Baker, B.Sc.

IN reference to your remarks on the efficiency of the Wright's propellers in November issue of AERONAUTICS, a simple consideration of a couple of fundamental laws of dynamics may be of interest as corroborating your conclusions on the matter.

A screw propeller rotating upon a standing machine discharges a certain number of pounds of air backwards every second.

The two fundamental laws which will be quoted may be found in text books on dynamics. They are the law of kinetic energy and the law of momentum.

The law of kinetic energy is expressed by the equation:

$$W = \frac{64\ K}{V^2}$$

where (K) is the number of foot pounds of work which, applied to a body (or volume of air) of (W) pounds weight, will give it a velocity of (V) feet per second.

The law of momentum is expressed by the equation:

$$F = \frac{W\ V}{32\ T}$$

where (F) is the force in pounds which, applied to a body (or volume of air) of (W) pounds weight for a time (T) seconds, gives it a velocity of (V) feet per second.

Consider now two specific cases for the sake of comparison. Take two propellers rotating on standing machines using the same horse-power each, but of different diameters. The given horse-power acting on the smaller amount of air in the smaller propeller gives the discharged air a higher velocity than with the larger propeller. This velocity corresponds somewhat to the slip in a propeller on a moving machine, and should not be mistaken for the velocity of the machine.

Let the two propellers be of such sizes that for one horse-power applied to each, the velocity given to the discharged air by the small one is, say, 40 feet per second, and by the larger one is 20 feet per second. One horse-power is 550 foot pounds of energy expended per second. Consider the law of kinetic energy as applied to the volume of air discharged in *one second* by the two different propellers. We have for each propeller $K = 550$ foot pounds. $V = 40$ and 20 feet per second, respectively. Then the weight (W) of air discharged by the small propeller in one second is:

$$W = \frac{64\ K}{V^2} = \frac{64 \times 550}{40^2} = 22 \text{ pounds of air}$$

Again, for the large propeller

$$W = \frac{64 \times 550}{20^2} = 88 \text{ pounds of air.}$$

Now that we have the values of (W), or weights of air discharged, we can apply them in the equation of momentum and get the force applied to the air, or the thrust of the propellers.

For the small propeller we have,

$$F = \frac{W\ V}{32\ T} = \frac{22 \times 40}{32 \times 1} = 27.5 \text{ pounds thrust.}$$

Again, for the large propeller,

$$F = \frac{88 \times 20}{32 \times 1} = 57 \text{ pounds thrust.}$$

Of course, in these two cases the loss of energy due to skin friction and to mixing up of the air is neglected, but the figures show striking comparison in favor of the larger propeller, both in having smaller slip and in having higher thrust than the smaller one for the same amount of energy in each case expended in producing slip.

THE MEANING OF EFFICIENCY

By M. B. Sellers

There are two meanings of the term propeller efficiency.

One, the *true efficiency*, is the useful work of the propeller, divided by the power absorbed by it. Now the useful work is the speed of the aeroplane, multiplied by the thrust of the propeller while driving the machine at that speed, and, of course, the power absorbed is the brake horse-power (in foot pounds) of the engine at the number of revolutions made under those conditions less the power lost by transmission.

The other meaning of propeller efficiency is simply the *thrust* exerted by the propeller when revolving at a fixed point, multiplied by the pitch velocity; and this product, divided by the foot-pounds delivered to it by the engine. The "pitch velocity" is the pitch times the number of revolutions per minute.

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AERONAUTICS always has been, and ever will be, "free and independent."

It plays no favorites.

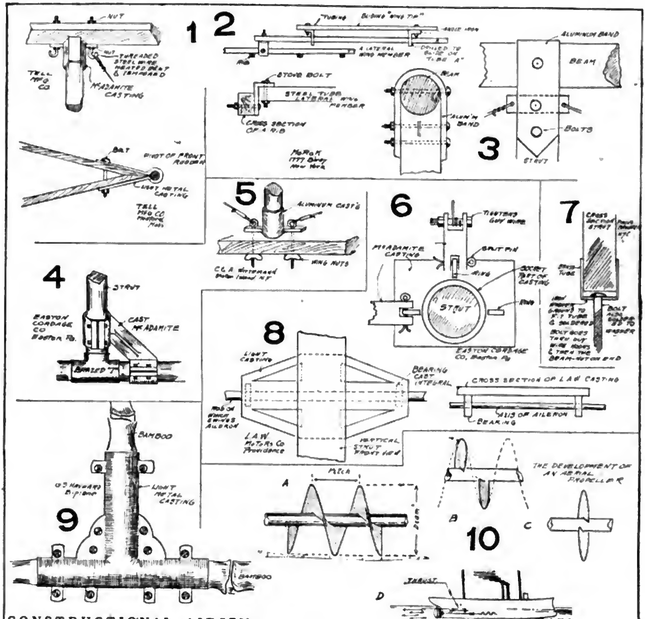
It gives praise where praise is due.

It condemns on just cause.

It feels entitled to criticise where criticism appears needed. It holds the privilege of criticizing adversely as well as favorably.

The columns of AERONAUTICS are always open. It courts criticism, is glad to hear from its readers, and will, further, print any letter taking issue upon request.

CONSTRUCTION AIDS, XI



CONSTRUCTIONAL AIDS—11

MANY of the scheme's illustrated here were seen on machines at the Boston show. Figure 2 shows Morok's arrangement for sliding in or out the auxiliary stability surfaces. Figure 3 shows the fastening of vertical struts to horizontal beams in the wooden framework of the tail structure. The L. A. W. Motor Co. bolts the aluminum casting shown in Fig. 8 to the back of the front strut, and this acts as the hinge for an aileron similar to the Curtiss.

Fig. 10 illustrates the terms "pitch" and "thrust." The screw propeller is merely an adaptation of an ordinary wood screw such as we are all familiar with, and which consists essentially of a spiral or thread traced or formed round a central core or axis. The distance traveled along the axis is by the thread in one complete revolution is the "pitch." See 10-A.

Now, the screw of an aeroplane does not work in wood or iron but in the air, and it will consequently only advance for one revolution a portion of the distance it would do if it were working in some solid substance, and the difference between the distance the screw actually drives the flying machine and the distance it would drive it if working in some solid medium is called the "slip of the screw," and is generally expressed as a percentage of the latter amount. The result of revolving a screw in water or air is to project a current or stream in a direction approximately paralled to the axis of the screw, and the rection from this in the flowing is called the "thrust," and the aim of every designer is to obtain the greatest possible thrust from any given dimensions of propeller when working at its designed speed.

Talks With Inventors, V.

By F. O. Andreae

:: PATENT ATTORNEY ::

THE fifth of a series of articles on the requirements of the patent laws of the principal countries of the world, by F. O. Andreae.

Norway.—Patents of invention are granted for a period of 15 years from the date of filing and a certificate of addition can be obtained, which ends at the same time as the principal patent.

New inventions capable of being utilized industrially are patentable with these exceptions: Inventions dealing with breaches of the law, good morals, or public order. No article of consumption of first necessity, or luxury, or a medicine is patentable, but the processes or apparatus employed remains patentable.

An invention is not considered new if, before the date of application for patent, it is already sufficiently well known to enable it to be worked by people in the trade; the publication of a printed work or the exhibiting of the invention at international exhibitions, would not constitute an anticipation until after six months.

The patent must be worked within three years from the date of the grant of the patent and subsequently every year.

There are annual fees increasing every five years.

Portugal.—Patents allowed for a period of 15 years from the date of grant. Patent of introduction of a maximum duration of 10 years and certificate of addition ends at the same time as the principal patent.

Patentable inventions are: Industrial object or material production of a commercial character. Improvement or amelioration of a product or of a known industrial object of the same nature. Discovery of a method easier and less costly of production.

Exceptions: Pharmaceutical preparations and remedies for men and animals, chemical productions; processes for obtaining these, however, are patentable. Inventions prejudicial to health, public security or against the law.

An invention is considered new which has not been described in any publication whatever during at least the last 100 years or which has not been used notoriously in Portugal and in Portugese possessions.

Patent must be worked within two years of date of patent and subsequently every two years.

There are fixed annual payments.

Russia.—Nature and duration of the grant: Patents of invention for a period of 15 years. Patents of importation end at the same time as the foreign patent. Certificates of addition ending at the same time as the principal patent.

Patentable inventions: Improvements which present an essentially new element, either as a whole, or in one or several of their components parts, or again in the original combination of their parts where these are already known separately. Exceptions: Scientific discoveries or abstract theories, inventions contrary to public order, morals and good living, chemical products, food stuff and analogous materials, medicines and their processes of manufacture.

An invention is not considered new which has been described in a work so sufficiently and completely as to enable it to be reproduced, what is known abroad without being patented, or which is patented there by some one other than the applicant, unless the patent has been made over to the applicant.

Patent must be worked within five years from the date of the signing of the patent.

Annual fees.

Sweden.—Patents granted for 15 years from the date of the deposit. Certificates of addition end at the same time as the principal patent.

New inventions relating to industrial productions or new processes are patentable with these exceptions: Inventions of which the working is against the law or good morals; food products and medicines.

An invention is not considered new which is described in a published print or sufficiently worked for an expert to be able to reproduce it.

The patent must be worked within three years, and subsequently every year.

There are annual fees to contend with.

Switzerland.—Patents for a period of 15 years from the date of application. Certificate of addition ends at the same time as the principal patent.

All new inventions applicable for industrial purposes and capable of being represented by models are patentable. The invention is not considered new which at the date of the application for the patent is sufficiently well known to enable it to be carried out by one of the trade.

No period is fixed for the working of the patent.

There are annual fees.

Turkey.—Patents are granted for 15 years from date of application. Certificate of addition ends at the same time as the principal patent.

New industrial productions or materials are patentable; new methods or the new application of known methods. Exceptions: Pharmaceutical compositions, schemes or combinations relating to finance or to sales. Inventions of which the application is against order, public security or good living and against any law in force.

The laws simply specify that the invention must be new.

The patent must be worked within two years from the date of patent. Subsequently every two years.

Fixed annual payments.

Finland.—Patents of inventions are granted for a period of from 3 to 12 years.

New inventions relating to manufactures of industry and art are patentable with these exceptions: Medicines, inventions the working of which is against the law, general security or good living. The invention must be new. The patent must be worked within two years from the date of patent.

There are fixed annual payments.

National Fund For Aviation

THE West somehow is more progressive than the East. Perhaps it has more breadth of view than actual step-ahead-itiveness.

At any rate, a San Francisco newspaper, the Bulletin, is the first to editorially urge a national aviation movement. In speaking of the visit of Cortlandt F. Bishop to Washington to present the resolution of the St. Louis conference in regard to equipping the army with the means to carry on aeronautic work "as a scheme to encourage aviation," it says:

> "It seems rather a left-handed way of getting at a good thing. The President is not believed to favor it, because it would interfere with his campaign of official retrenchment, and it is not regarded as imperative or essential at the present time. Nor is the plan likely to have the effect Mr. Bishop seeks, for it is a matter of history that military experiments in aviation have done little to develop the science along practical lines.
>
> "Independent investigation, on the contrary, has been marvelously prolific in the improvement of man-flying. Civilian inventors and scientists have turned their attention to the airship with excellent results, and are continuing to do so. Why not, therefore, ask the President to urge a national aviation fund upon Congress? This could be made to represent a definite sum and would not be subject to the politics, jealousies and red tape of an army issue. It would attract international attention, do away with the necessity of secret demonstrations and give a great impetus to the work of solving the problems of aerial navigation.
>
> "We, of America, who have taken so prominent a part in aviation development, should set the pace with such a fund. It would be worth the sum expended many times over in the way of national prestige, and should not seriously interfere with the national economy program.
>
> "If Mr. Bishop will drop his present circumambient idea in favor of this direct course to the end he seeks, he may succeed in interesting the President and making a triumph out of his present failure. A national fund for the promotion of aviation will meet with the approval of all progressive persons, and should prove so popular an issue that Congress will feel compelled to give it favorable attention."

But—Congress is in the East

Criticize Wright Suit

IN THE days following the opinion handed down in the Paulhan suit various newspapers of the country remarked editorially on the situation.

The St. Paul Dispatch objects to the Wrights turning "their success in aviation into a monopoly exploited primarily for the benefit of their pocketbook. All those who fly must fly on the Wright patent machine." This paper says that patent laws now make for monopoly and suggests that the stand taken by the Wrights, if upheld by the courts, may be the cause of securing a revision of patent laws in line with present needs.

A more modified view, and one which apparently seems to express the general opinion, was printed by the Boston Herald. This says:

> "Another judicial decision entrenches the Wrights in their claim to the system of three-rudder control of aeroplanes. There is not the slightest desire among Americans to see these pioneers in aerial flight fail to receive the customary enrichment which our patent system ensures to men of insight, patience and daring, but it must be recognized that the rights which the courts are granting them are so broad that there is bound to be a check to experimentation by other aviators Exclusion of men like Paulhan from sharing in contests here is bound to have its effect when our flyers enter competitions in Europe."

Zodiac Airship to Come Here.

A contract has been closed with A. Leo Stevens by the makers of the French sporting dirigibles, "Zodiac," for the construction of a hydrogen generating plant, triple system, at Newport, R. I., for the inflation of one of these airships that has been purchased by Messrs. Davis and J. H. York. This plant will make gas at the rate of 2,500 cubic feet an hour. Mr. York has been abroad and made several trips with Count de la Vaulx in an airship of this type.

Models and Contests

AERONAUTIC model contests held under the auspices of the West Side Young Men's Christian Association, at the 22nd Regiment Armory, New York, were continued on Saturday, March 5th, after a lay off of a number of weeks owing to the models being exhibited in Boston and Newark.

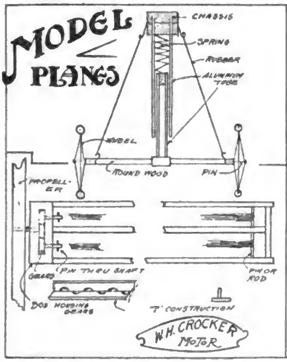
Edward Durant, has offered a cup for the Boys' Class, which will go to the boy winning the first three "legs." The A. Leo Stevens cup for the longest flight in 1910, was placed on exhibition in the Armory on March 5th. It stands about two feet high and is a beautiful piece of workmanship, being exquisitely engraved.

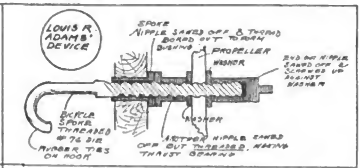
The following is the result of the contest on March 5th in the Men's Class: W. Morrill Sage, with a Wright biplane, 71 ft. and 4 ins.; M. P. Talmage, with a Curtiss biplane, 53 ft. and 2 ins.

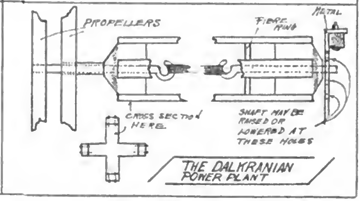
There were twenty-one machines entered all together, and the winners in the boys' class were: F. M. Watkins, with a monoplane of his own make, 121 ft. 7 ins.; Percy Pierce, 113 ft. 3 ins.; and Ralph Barnaby, 76 ft. 2 ins.

The next flight took place on March 12th. The winners of the men's class was W. Morrill Sage, with a Wright biplane, 81 ft. 5 ins. In the boys' class, the three longest flights were made by new entrants: D. Grier, with a Langley make, two propellers, 133 feet; H. Southworth, double propellers, monoplane of the Langley type, 114 ft. 8 ins.; George Merz, same kind of machine, 96 ft. and 4 ins. (These two boys are partners, and they have just completed a man-carrying machine.) There were 14 machines entered and Frank Schoeber brought a Bleriot 6 ft. long with a 7 ft. spread. It was a very powerful machine and exceedingly well made. Upon one of its first trials it ran into a spectator, smashed one of the wings and the propeller. He promised to have it ready for the next contest, and from all appearances it should be a winner.

The next contest will take place on March 26th, being a lapse of two weeks. A number of the contestants complained that they did not have time enough to work on their machines, and the Y. M. C. A., therefore, decided to hold contests bi-monthly, so that they will have a chance to get their machines in good working order.




LOUIS R. ADAMS' DEVICE
SPOKE NIPPLE SAWED OFF & THREAD BORED OUT TO FORM BUSHING
PROPELLER
WASHER
END OF NIPPLE SAWED OFF & SCREWED UP AGAINST WASHER
BICYCLE SPOKE THREADED #76 DIE
RUBBER TIES ON HOOK
WASHER
ANOTHER NIPPLE SAWED OFF OUT THREADED, MAKING THRUST BEARING


PROPELLERS
FIBRE RING
METAL
CROSS SECTION HERE
SHAFT MAY BE RAISED OR LOWERED AT THESE HOLES
THE DALKRANIAN POWER PLANT

Chanute Model Cup Contest.

The Aeronautic Society held its first elimination contest to select a team of three to represent it in future competitions for the Octave Chanute Challenge model cup, on March 3 at the 69th Regiment Armory, New York. A goodly crowd was present—members, friends and the general public attracted by the announcement. The contest was open to boys as well as men and it so happened that a boy carried off first honor.

Frederick M. Watkins was first, with an original design monoplane, 148 ft. Laurence J. Lesh was second best with his own design monoplane, 125 ft. His apparatus was all wood, held together with elastic bands. Ralph S. Barnaby, third, 114 ft., with his own design of monoplane something along the Demoiselle order.

The other contestants were Dr. Dederer, Louis R. Adams, W. Morrill Sage, W. H. Crocker, L. W. Houck, J. K. Salkranian, M. P. Talmage, C. G. Halpine and W. S. Howell, Jr.

The Herring-Burgess Machine

CERTAINLY the finest machine that has yet been seen, from a point of fine workmanship and finish, is the new Herring-Burgess biplane, built by the W. Starling Burgess Co., of Marblehead, Mass. Five orders have been received for machines. A duplicate of the one shown at Boston goes to C. W. Parker, of Abilene, Kans., on March 15. The others will be turned out at the rate of one a week. Two will be of special design, and the others, duplicates of the present. One will be used in the Gordon Bennett meet. Sheds are being built, to house two machines, on Plum Island, near Newburyport, Mass., where there are many miles of flat open country.

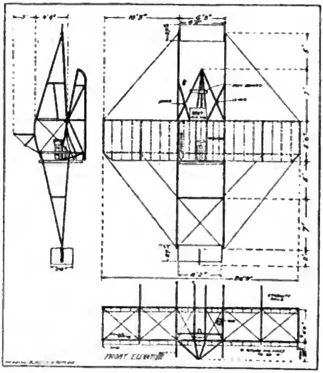
The new biplane resembles greatly the well-known Herring-Curtiss, except that it has neither wheels nor "ailerons," the engine is set further to the rear, so that there is no notch in the planes for the propeller and the planes are set at a steeper angle. The curve is more efficient, lifting a given load at less speed and with less thrust. The travel of the center of pressure is only about 4 in., about one-third of that in its prototype. The controls are different, also, there being no steering wheel; levers being substituted, in addition to which are the foot controls. The control system is being patented so that full details are not disclosed.

Main Planes.—These spread 26 ft. 9 in., with a depth of 56 in., spaced 4 ft. 4 in. apart. Succeeding machines will be spaced 4 ft. The ribs 25 to a plane, as well as the other parts of the machine, are of spruce. The small ones have three laminae and the main ribs at the 16 strut points have 12. The planes are covered with "Naiad" silk. Under the motor, between the central struts the whole lower surface is of aluminum sheeting. No turnbuckles are used throughout the machine, guy wires in the main cell being kept taut by the introduction of coiled springs, which absorb all shocks. The strut sockets are of tempered sheet tool steel, weighing but a half-ounce each. They are in two parts, one being fastened to the lateral beam and the other to the strut itself and are joined by a pin, which makes of the two parts a hinge, instantly detachable. All struts and cross-beams are fish-shaped. The hollow cross or lateral beams are hollow, as well as the larger spars running out to the rudders, and each section weighs but two pounds. Each lateral beam is in three sections and the main cell as a whole separates quickly into three sections, or each plane alone if desired. The planes are set at a very steep angle.

Other Surfaces.—A single surface horizontal rudder 27 in. deep by 6 ft. 2 in. spread is to be used in place of the double surface rudder exhibited at the show. This is pivoted 12 ft. from the front edge of the main plane. In the rear, 12 ft. from the rear edge of the main cell, is pivoted a movable horizontal single surface 27 in. by 6 ft. 2 in., bisected by a vertical movable rudder 2½ ft. by 2 ft.

Power Plant.—A stock 25-horse-power Curtiss motor, in which the oiling system has been changed and the material and size of bearings been altered, drives direct a 4-bladed Herring propeller, 6 ft. diam. by 5 ft. pitch, which gives a thrust with this engine of over 200 pounds. Ignition is by Bosch and the radiator is an El Arco.

Stability.—The lateral equilibrium of the machine is partially automatic, banking itself on curves in proportion to the centrifugal force. The device was not shown at the Boston exhibition.



Back of six of the eight front struts of the main cell are masts 3 ft. in height, from which vertical triangular sails or vanes run back to points along the rear lateral beam. Each of these is held, when the machine is on the ground, by rubber bands, in a plane at right angles to the lateral beams. When the machine heels over on turning, or skids, the pressure against these vanes automatically tends to right the machine. It would be possible to equip these with a device by which the aviator could move them as might be required.

Control.—Steering right and left is by a lever in either hand working independently. Fore and aft control is by a foot lever on the right side, and left foot controlling the throttle. The spark is fixed. Both these foot levers are mounted on friction bearings, capable of adjustment, so that the rudder will retain the angle at which it is set by the foot if the foot is taken off. The same applies also to the engine. The arms may rest on two brace spars running from the strut on either side of the aviator to the vertical struts in the outrigger framing.

Mounting.—The machine rests on the central skid. Under the two middle struts of the main cell are two skids raised a few inches from the ground, while at each extremity of the main planes is another small skid. At present, the machine is designed to slide on the ice on the long central skid. In starting, the machine is tied to a post by a rope ending in a butterfly hook. When the aviator is ready, he pulls a string which allows the wings of the "butterfly" to fly back slipping the rope. The weight of the entire machine, without operator, no fuel or supplies, is 360 pounds

For teaching, a motorless duplicate will be used, using a falling weight to be released by the operator. As the student becomes more and more familiar with the machine, the height of the drop will be increased. A tank of water, equal in weight to the engine, will be installed.

Herring-Burgess Machine's First Flight.

Hamilton, Mass., Feb. 28.—The first trial flight of the new Herring-Burgess aeroplane took place late this afternoon over the frozen surface of Chebacco Lake, with A. M. Herring as aviator, after waiting all day for the rain to let up.

The machine was hooked to the butterfly releasing device which was secured to a stake, the Curtiss engine started on the first turn, and after a slide on the ice of about 80 ft. under its own power, the machine easily took the air and traveled on even keel with the light wind at an elevation of 45-50 ft. for about 140 yds. A turn to the left was made to try the stability device. It was the first time the stability device and the releasing scheme, both of which worked satisfactorily, had been tried out in flight.

A Newly Discovered Right of Way

By Charlemagne Sirch

DURING this period of aeronautic progress the question of ownership of the air has already been the subject of debate. The rights of the landlords, based on Blackstone's musty law "Who owns the land owns to the heavens above," have recently been the basis of speculative fiction in which this circumambient gaseous area has already been segregated for commercial purposes into its components of linear and of gaseous content—the former as an aeronautic right of way and the latter as a source of nitrates in the manufacture of fertilizer now being conducted as a great enterprise in Sweden.

As a result the landholder, having made a fortune from the timber on his land and perhaps another from the mineral beneath or the soil on top, is rubbing his palms hopeful of a new source of income. On the other hand the aeronaut or aviator is tacitly under suspicion as a trespasser. He boldly makes his flights through air space assumed to be the property of the landlords who for the present suffer the outlaw to go unhung.

The purpose of this paper is to remove this stigma of aerial privacy and to "nail the Stars and Stripes" on a newly discovered territory.

Imprimis, by the common law the possessor of a piece of land—of a city lot 50x150 ft. in its dimensions, for example—owns all land beneath and air space above to the zenith. Surely no landowner, supposing him to be cognizant of his rights in *Cujus est solum, ejus usque at caelum* can lay claim to more than his right and title to this column of air space 50x150 feet in cross-section and extending to the "heavens above."

I respectfully recommend that we grant this right.

Now I beg to point out that a segment of a spherical body like the earth has lines constantly diverging from the center. These lines at the surface after passing through the boundary lines of the above mentioned city lot continue diverging while the air space belonging to the landlord is contained within perpendicular lines of his surface area. The angle S between the vertical boundary of the land and the projected divergent radius presents abundant linear dimensions in every direction for aeronautic purposes.

Having duly explored sufficient of this newly discovered air space to calculate its extent I now take pleasure in repeating the Peary business with the Stars and Stripes and present this vast region to all aeronautic pilots, pirates, and quasi-trespassers present and to come to be used as an aeronautic highway in perpetuity, world without end. Amen.

Shown at Boston

BOSTON, Feb. 23. The most complete aero exhibition ever held in this country closed to-night after being in progress in the Mechanics Building since the 16th. While crude as compared with shows abroad, it suggested next year's possibility. Nine aeroplanes complete, four more nearly finished, six gliders, fabrics, motors, balloons, parts, accessories and innumerable models were shown.

AEROPLANES COMPLETE.

The W. Starling Burgess Company, of Marblehead, Mass., showed for the first time the new Herring-Burgess biplane, built by the Burgess concern from designs by A. M. Herring with modifications by Mr. Burgess. This machine stood out from all the others by reason of the exceptionally fine workmanship displayed in every detail of its construction.

The Aerial Exhibit Co., 2717 Heath Ave., New York, composed of J. C. B. Storrs and Romer Stevens, showed a very close copy of the Bleriot XI which they call the "American Blerioplane." This sold for $3,750, including instruction. This was fitted with a Cameron air-cooled 4-cylinder 24-horse-power motor. The warping of the wings is done by the movement up and down by either knee of a centrally pivoted lever just above the knees. The other operations are controlled by a wheel and post as in the Curtiss.

Fred Shneider, 1020 East 178th St., New York, had a fairly exact duplicate of a Wright biplane with an Elbridge, 1909 type, 3-cylinder 2-cycle engine. The ailerons were attached to the rear of the planes as in the Farman.

The Easton Cordage Co., Easton, Pa., had on exhibition their $3,450 Voisin type machine, of steel tubing, fitted with their new 8-cylinder motor. This has already been described in AERONAUTICS.

The Scientific Aeroplane and Airship Co., 361 Broadway, New York, showed an Antoinette-type and a Bleriot XI-type, the latter selling at $1,000. This had a 4-cylinder 2-cycle 16-horse-power Duryea motor, air cooled.

Louis G. Erickson, of Springfield, Mass., had a biplane of the Curtiss type but which was novel from a constructional point. The surfaces were flat and every bit of the entire framework, save the engine bed, was of bamboo. This was called the "Ericka II." A Buick motor was installed temporarily. The wing tips were controlled by a shoulder brace as in the Curtiss.

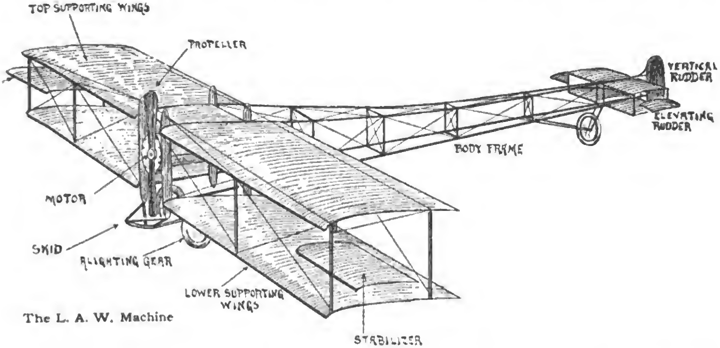
A new York concern, Morok, 1777 Broadway, showed a monoplane similar to the Bleriot XI at $2,500. Lateral stability is to be secured by sliding "wing tips" on top of the main planes, increasing the surface on either side as desired. These follow the plan of A. L. Pfitzner described in the March number. The wings spread 26 ft, are 7 ft. front to rear, set at a slight dihedral angle. The sliding panels are about 2 ft. spread by 3 ft. the other way. These slide on two of the three steel tubes which constitute the lateral members of the wings. The 3-strip laminated ribs, ½-in. by ¾-in. section, are of wood. The cloth is laced to wires at both the entering and rear edges. The movable horizontal rear control is 5 ft. spread by 3 ft. long. Just back of this is the vertical tail about 3 ft. by 3 ft. The rear wheel steers on the ground in conjunction with the rear vertical. Two handwheels operate the controls as in the Antoinette. It is to be equipped with a Harriman Motor Works 30-horse-power motor.

A biplane of quite novel features were exhibited by the L. A. W. Motors Co., of Providence, R. I., and called the "Page-Light." The main planes have a spread of 22 ft. while the wing tips add 5 more feet to the spread. The depth of the main planes is 6½ ft. The wings are light frames of ash, spruce and whitewood. The construction is such that the upper and lower wings on each side may be easily taken out of the sockets, in the central framework, together or independent. A biplane horizontal tail of 7 ft. spread by 3 ft. length, which is also the size of the single surface wing tips between the main planes, is provided with two planes, 3 ft. by 2 ft., which act as a horizontal rudder. These latter are attached to a central member which acts as a bearing. These planes are carried outside of the biplane tail In the extreme rear is a vertical rudder, 5 ft. by 2 ft., which steers in conjunction with the rear wheel of the 3-wheeled chassis. For a total of 318 sq. ft. of supporting surface in the machine the weight is estimated to be 750 pounds with aviator.

A 6-cylinder 2-cycle revolving reciprocating L. A. W. motor is hung on trunnions in the front of the main planes and can be rocked back and forth by moving a pivoted lever which carries the steering wheel either forward or backward. In getting off the ground the motor with its propeller is designed to be tilted upward. At the same time, by means of a cable, the rear horizontal controls are tilted up in conjunction. Steering right and left is by turning the wheel. A lever operated by the aviator's shoulder controls the wing tips.

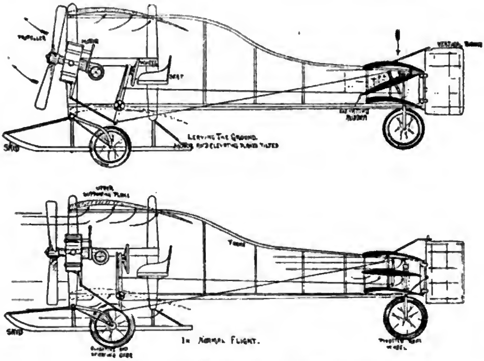
INCOMPLETE MACHINES.

The monoplane of Elmer Burlingame, P. O. Box 2953, Boston, was an example of unique construction. The 30-horse-power machine was listed at $3,590 and the 50-horse-power at $5,000. No guy wires were used in the make-up, the main planes being supported by trusses underneath. The spread measures 40 ft., depth of planes 10 ft., total length 43 ft., weight without operator or fuel estimated at about 600 pounds. A Harriman Motor Works engine is to be installed to drive an enormous propeller 9 ft. in diameter and 16 ft. pitch, and whose thickness is 9½ in.



The L. A. W. Machine

G. S. Hayward, Hyde Park, Mass., had a biplane in general appearance like the Curtiss. The main planes measure 44 ft. by 7½ ft., vertical tail and horizontal control in rear, each 3½ ft. by 7 ft. The front control is 7 ft. by 3½ ft. by 3½ ft. The wing tips and rudders are operated the same as in the Curtiss. All the structural work is of bamboo except the ribs and engine bed. A 12-cylinder 100-horse-power Buffum motor is to be installed.



View of L. A. W. Showing How Motor Tilts

Another Curtiss type was that of Eisner-Downey. Main planes, 30 ft. by 5 ft., spaced 5 ft. apart. The front rudder is 2 ft. by 5 ft. by 2 ft. Rear rigid horizontal surface, 5 ft. by 2 ft. Rear vertical rudder, 2 ft. by 3 ft. A 25 horse-power 4-cylinder motor of their own manufacture was shown partly finished. Fine workmanship was displayed on this. It is to weigh but 90 pounds. Fred Shneider had a Wright-type machine, without warping device or wing tips partially complete.

GLIDERS.

Gliders were shown by the Wittemann Brothers, of Staten Island; the Tell Manufacturing Co., Medford, Mass., Harvard Aeronautical Society; Southworth and Merz, two New York boys; Harry C. Lord and M. P. Hubbell, Ashburnham, Mass., who have formed the Ashburnham Aviation Co.; and the Mass. Institute of Technology Aero Club.

The Wittemann glider was of their well known type but stained and finished to the queen's taste. This easily would have won the workmanship prize had any been offered. The Harvard glider had two single surface front controls on either side, no tail and the operator lies in a cradle of woven catgut. The M. I. T. glider had a Lilienthal tail, with a single front horizontal rudder, with wing tips outside the main planes.

MOTORS AND ACCESSORIES.

The Cameron Car Co., Beverly, Mass., showed two of their regular air-cooled 24-horse-power 4-cylinder and 36-horse-power 6-cylinder motors. The Harriman Engine Works, 53 State St., Boston, had a small model rotary gas engine. The Easton Cordage Co., Easton, Pa., exhibited their new 8-cylinder 50-horse-power motor with a Requa-Gibson propeller mounted on the shaft. H. H. Buffum, a 12-cylinder 100-horse-power motor, cylinder set V, weighing 388 pounds. L. A. W. Motors Co., 6-cylinder 2-cycle rotary air-cooled motor. The cylinders are mounted offset radially about a central hub with their heads to the center. The piston pins, instead of connecting rods, are provided with ball bearings of large size, forming rollers: these run around in a circular ring set eccentric to the cylinder hub. This eccentricity causes the pistons to move in and out of their cylinders as they rotate about their hub. The inlet for the fresh gas is through the central stationary hub, which has a port which registers in turn with ports in the cylinder heads. Ignition is accomplished without any electrical apparatus, except for starting. In operating each cylinder fires the one next to it by means of a by-pass through the central hub, which admits some of the burning gas into the cylinder just ahead. A single spark plug may be fitted into this port. A. P. Homer, 88 Broad St., Boston, was another exhibitor of motors.

The B. F. Goodrich Co., Akron. O., exhibited the well known Palmer tires, especially made for aeroplane work. The Goodyear Tire and Rubber Co., also of Akron, made a showing of fabric.

The C. E. Conover Co., 101 Franklin St., New York, booth was quite elaborate. They showed their various weights and grades of Naiad aeroplane cloth.

The El Arco Radiator Co., 6 East 31st St., New York, was the only exhibitor of radiators. The El Arco radiator is used almost universally on American aeroplanes.

MISCELLANEOUS.

There were models and flying toys innumerable. The Church Aeroplane Co., 15 Myrtle Ave., Brooklyn, which makes a specialty of manufacturing flying toys for the market and models of various machines to order, have announced their intention to build full-sized machines. This company sold out every one of their toys, most of the models of well known aeroplanes and obtained several orders for special models. One wealthy Bostonian ordered a $75 2-inch-to-the-foot model of the Voisin biplane. This purchaser is building a big machine of his own.

The Boston Y. M. C. A. aero school had a pretentious exhibit of kites and models of the best known aeroplanes.

The International School of Aeronautics exhibited a model of the Baldwin dirigible, a Chauviere propeller, various instruments used in ballooning, aeroplane parts, etc. The Harvard Aeronautical Society was an exhibitor of Bleriot and Wright models.

Among the boys who had models were Percy Pierce, C. G. Halpine, W. S. Howell, Frederick Watkins and Earl F. Kimball. Many of these were of the very finest workmanship.

Charles F. Durant, son of the first American aeronaut, showed the flag carried by his father and an old-time poster announcing an ascension.

The Aero Club of New England, which had a good exhibit of photos, inflated the balloon Boston with air in the middle of the hall, while at one side were three balloon baskets belonging to A. Leo Stevens, of New York. One of these was from the balloon "Mercury," of 160,000 cu. ft, one belonging to the "America," and to make a contrast he had the basket of the "Midget," a little balloon of but 11,000 cu. ft., a one-man affair. Another exhibit of the Aero Club of New England was of Charles J. Glidden's instruments.

Samuel F. Perkins, of Boston, the professional advertising kite flyer, had an exhibit of various kinds of kites used in his work. The hot air balloon as used at the county fairs was shown by the New England Balloon Co. W. Morrill Sage, who is associated with Leo Stevens in model building, had a beautiful model.

A. V. Wilson, of Bar Harbor, Me., had an "aeroplane ice boat." Above the usual triangular ice-boat frame was a monoplane surface, set at a dihedral angle. It had a 7-horse-power motor. The wings could be instantly set at any angle of incidence when sufficient speed on the ice has been attained.

The magazine AERONAUTICS had an interesting booth and adjoining was sold the "A. B. C. of Aerial Navigation," so that no one had to go away without knowing pretty nearly all there was to learn about air ships and flying machines.

I wish to thank you for the benefit I have derived from your magazine. I recommend it to all interested in the science of aeronautics. —J. B. F.

Aviation

Wrights Form Exhibition Co.

The "Aeroplane Exhibition Co., exclusive licensees under the Wright Brothers' patents," with Roy Knabenshue as manager, has been formed to conduct exhibitions and meets throughout the country during this year. It is said that practically no Wright fliers will be delivered to amateurs until the fall.

Several aviators are now being taught the construction work. Experiment grounds have been selected near Montgomery, Ala., where flying lessons will shortly begin.

Clifford B. Harmon, who now has a Curtiss machine and has ordered a Farman, saw the Wrights at Dayton on his way East from his balloon trip, in regard to obtaining privilege of flying the Farman machine he has bought. Mr. Harmon stated to a reporter that the Wrights refused at the time to permit him to fly his Farman, though he offered to pay them the profit on one of their machines at $7,500, and even to purchase one of them. Mr. Harmon is awaiting a definite decision.

Ten Entries in G-B Aviation Race.

Three more entries have been received for the international aviation race from Great Britain. This makes ten in all, though it is not certain that Italy will have a machine. The Wrights have signified their intention not to place any obstacles in the way of this particular contest. The location of the meet has not yet been decided by he A. C. of A.

McCurdy Flying at Baddeck.

The Canadian Aerodrome Co., composed of F. W. Baldwin and J. A. D. McCurdy, has been giving the new biplane, "Baddeck II," further trials. On March 3 two flights were made over the ice of Bras d'Os Lake, lasting 25 and 16 minutes.

On the 8th both Baldwin and McCurdy flew at one time. Three passenger flights were made of 4 to 7 minutes duration. The machine was described in the "Foreign Letter" last issue.

Aviation Meet for Buffalo.

A real aviation meet of possibly a week's duration is the plan of the new Aero Club of Buffalo for June, though it may be that it may have to be put off until a little later. Secretary D. H. Lewis is now in communication with aviators with the idea of finding out whether they can participate. He says: "It is the intention to jump right in and endeavor to give the people in this vicinity some sport worth seeing."

MODEL CONTESTS SCHEDULED.

The club is going to do everything it possibly can to promote the sport. All available models, together with two or three complete flying machines, will be exhibited at the boat and sportsman's show which takes place in Buffalo March 21 to 30. On April 1 a model aeroplane contest will be held in the 65th Regiment Armory, the first of a series.

A. C. of Penn. Plans Meet.

The Aero Club of Pennsylvania, Phila., is planning an aviation meet for July or August. Appeals are bing made by chairman of the meet committee, Henry S. Neely, 810 Betz Bldg., to the business associations of Philadelphia and one large organization has agreed to co-operate. A large field permitting oval flights ot 3½ miles is available within three miles of the center of the city, out South Broad St., towards the Navy Yard.

Customs Collector Holds Aeroplane.

As R. J. Saulnier was about to sell the Bleriot monoplane which was brought over last fall and started and ended its exhibition career by not flying at a land sale at Ampere, N. J., Collector Loeb stopped the proceeding, which was to satisfy a $600 mortgage held by one Lewkowicz, Saulnier's aviator, claiming that the machine came in under bond and could not be sold without payment of duty.

Saulnier is defendant in an infringement action brought by The Wright Co. when he imported the machine.

Phila. Aeroplane Co. Progress.

The Philadelphia Aeroplane Co. is working along actively. This company was organized with R. H. Beaumont at the head some time ago to build a machine along designs of Laurence Lesh and to take over some patents he has pending. Two types of machines will be put on the market; one a monoplane to sell at about $2,500, and a biplane along the lines of that designed for the U. of P. club, at $3,000.

The monoplane has the elevating and the vertical rudders in front, the propeller in the rear. Underneath are two fin keels. A new air-cooled motor, of which the company has the selling rights, is to be installed. This will consist of three units of two cylinders each, set "V" way. The crank case and shaft is so arranged that another unit may be added if desired. The three units of six cylinders will give about 30 horse power.

Rehearing in Wright-Curtiss Suit.

As stated in a former issue of AERONAUTICS, the motion for preliminary injunction in the Wright v. Curtiss suit was decided by Judge Hazel in favor of the Wrights, but no injunction was actually issued. The Wright patent claims means for warping the wing tips, in combination with a vertical rudder so as to turn the rudder in such a direction as to counteract the unavoidable tendency of the machine to turn around a vertical axis and out of its course when the wing tips are warped, as the deflection of the aeroplane shown in the patent necessarily occurs whenever the wings are warped.

It was the contention of the Wrights in the suit that the Curtiss machine operated in the same way. Mr. Curtiss contended that it was not necessary in his machine to turn the vertical rear rudder on this account as there was no perceptible deflection of the machine caused by his ailerons when restoring equilibrium. Judge Hazel in his opinion seemed to consider that the Curtiss machine must be deflected when the ailerons were moved, and that the rudder therefore must necessarily be turned, and that on this account the Curtiss machine probably infringed the Wright patent. The defendants have, however, since the decision, had test flights made with the rear rudder sealed so that it could not be moved, and found that the use of the ailerons for restoring equilibrium did not turn the machine, so far as could be detected by careful observation. The matter has also been mathematically calculated by Prof. Albert F. Zahm, of Washington, who has for many years given great theoretical attention to aeronautics, and his calculations are said to show that even under exceptional conditions there was no deflection of the machine which could be detected by the operator, and that Mr. Curtiss was probably right in stating that the rear rudder was not moved or used on account of any effect produced by the ailerons.

A rehearing of the motion for preliminary injunction was applied for, and in view of these new facts Judge Hazel granted it. The rehearing is set for argument on March 14 in Buffalo, when the matter will be thrashed out.

The Curtiss factory is working right along building and selling machines under the relief provided by a $10,000 bond. In regard to the flying of the machine with the rudder tied, quite a series of experiments have been carried out on the ice of Lake Keuka and Mr. Curtiss stated: "There is no turning tendency due to the use of the ailerons, and further to determine the resistance required at the wing tips to produce any noticeable turning tendency, I believe we have upset a great deal of theory."

Flights by Curtiss Aviators.

Chas. K. Hamilton met with an accident flying in an exhibition at Seattle, Wash., March 12th. He intended to just miss the water of a pond, but miscalculated and the machine hit the water at speed.

Hamilton and Willard's tour, since the Los Angeles affair, has covered Phoenix, Tucson and Douglas, Ariz.; Fresno, San Diego, and Bakersfield, Calif.; El. Paso, Tex.; and Portland, Ore., March 5, 6 and 7, together with E. H. Wemme, the Portland Curtiss agent. At Phoenix, Hamilton had a race with an automobile and won. At El Paso he demonstrated the possibility of aeroplanes being used for smuggling, crossing the border into Mexico several times and landing on both sides.

LANDS TO INQUIRE WAY.

An incident at Fresno was his landing on a farm in order to find out what direction to take to get back to the aviation field. A flight at El Paso was at a higher altitude above sea level than Paulhan's world record of 4165 ft. Here he went up 750 ft. above the town which is 3,702 ft. above sea level.

Otto Brodie was in Dallas, Tex., March 4, 5 and 6; Brodie is demonstrator for James E. Plew, of Chicago. Hamilton in Portland, March 5, 6, 7, together with E. H. Wemme, the Portland Curtiss agent. Frank H. Johnson, Curtiss California representative, flew at Stockton, Cal., March 5 and 6.

EXHIBITIONS PAY BIG.

At Fresno the gross receipts were $13,500. During the three days 19,898 people paid admissions, of which 4,120 bought grand-stand seats. The Chamber of Commerce has $5,000 left above expenses to devote to improvements on its building.

Phoenix did not do so well. The management took in for admissions and sales of stock in the show, $23,751.05. The services of the aviators cost $9,100. The total expenses were $12,246.10, leaving a cash balance of $11,504.10; percentage of cash balance to stock issued, 79.2 per cent. The stock sold amounted to $14,525.

American Aero Calendar.

April 6-9.—Memphis, Tenn., exhibition flights.

April 21-24.—San Antonio, Tex., exhibition flights.

May 13.—Dayton, O., aviation meet.

June 19-26.—Nashville, Tenn., exhibition flights by Hamilton.

July 5-6.—Peoria, Ill., balloon race (provisional).

June 30—July 10.—Atlantic City, N. J., aviation meet.

July or August.—Philadelphia, aviation meet.

August 12.—Indianapolis, Ind., balloon race.

September 17.—Indianapolis, Ind., elimination race to pick team for Gordon Bennett.

October 17.—St. Louis, Gordon Bennett balloon race.

————Cleveland, aviation meet.

————Buffalo, aviation meet.

Gordon Bennett Already Being Contested.

"BISHOP STRINGING THE PUBLIC."

The international aviation meet is already being flown with Cortlandt F. Bishop, head of the Aero Club of America, and Col. Jerome H. Joyce, president of the Aero Club of Baltimore, the only aviators.

Soon after Curtiss won the cup a committee was formed in Baltimore and Washington to urge the selection of College Park as the site. It was made plain that about $100,000 would be necessary in order to have the meet and one of the vice presidents of the A. C. A. promised his support for the Baltimore-Washington location. Feeling assured of its selection the committee worked indefatigably ever since to raise this big fund, and with success. President Taft, members of his Cabinet, the Diplomatic Corps, members of Congress, the Governor of Maryland, and the Mayor of Baltimore honored the committee with their patronage and manifested great interest in its success.

Last month it was announced by Bishop that he would be one of twenty to put up $5,000 to have the meet in New York. This announcement struck home in Baltimore and Washington and called forth a good warm letter from Colonel Joyce to Bishop.

The communication calls attention to the fact that no one has regarded New York as a contestant for the honor because the claims of New York have not been pushed and because many alleged objectionable features make it impractical as a site. And further, that College Park is nearer either Washington or Baltimore than any place on Long Island is to New York, that transportation lines are better, that the wind velocity on Long Island exceeds 20 miles an hour 60 per cent. of the time, while at College Park it attains that velocity only 12 per cent. of the time, that the temperature at College Park is higher, and that the objections raised as to the course itself have been removed.

The letter also says:

THOUGHT A. C. A. NATIONAL BODY.

"If New York has any interest in the coming aviation meet it has been kept well under cover. * * * Our understanding of the matter was that the Aero Club of America was a national organization—hence the affiliation of the other clubs. This quite debars it from taking any action of a local character. If it is to be regarded as a New York club and its officials empowered to act in the interests of their home city, that puts a very different aspect on the case. This is a point the members of our aero club would like to understand more clearly. Baltimore and Washington have gone too far in this matter to retrace their steps. Our people have declared for an aviation meet but I will be frank and tell you it must be the international aviation meet or nothing. No lesser substitute will satisfy us."

Bishop was annoyed because the contents of Colonel Joyce's letter was given the press before the letter itself reached him. "I shall not answer Mr. Joyce," said he, "for the reason that the letter does not require an answer and the statements made in it are largely matters of personal opinion. Of course, Mr. Joyce has a perfect right to hold his own opinions, and to express them if he wishes to, and in any manner that he may deem proper."

Colonel Joyce rejoins: "It is unfair to these cities to keep them dangling on a string while the effort is being made by the Aero Club of America to work up sufficient enthusiasm in their home city to justify the holding of the meet there."

The Beach Bleriot-Type Monoplane.

One of our photographs shows the Bleriot type monoplane of Stanley Y. Beach, with which he is still experimenting as we go to press. On March 5th he tried his machine in the main street of Stratford, Conn. Some difficulty was experienced in keeping the monoplane on the road, which is a wide macadamized street 75 feet in width, and several times it ran into the gutter. After several attempts Mr. Beach succeeded in getting the tail to rise, whereupon he ran the machine down the street at a fast clip for a block or more.

After this experiment, which was unsuccessful as far as getting the front end of the machine off the ground is concerned, Beach decided to make new and larger wings with a greater curvature. It is expected that with these wings, the machine will readily fly, as the surface is such that a load of less than three pounds is carried per square foot, whereas in Bleriot's latest monoplane he is carrying a load of nearly 6½ pounds per square foot—a truly remarkable weight per unit of surface.

Negotiations are now going on with parties for the sale of his machine, and he expects to dispose of it as soon as it has made a flight.

New Greene Machine Ready.

New York, March 13.—The Greene Company has just installed a Harriman engine in the new biplane with vertical surfaces in the main cell and will probably begin trials to-morrow at the Aeronautic Society's grounds at Mineola. This machine has been sold to Auchinvole, Botts and Crosby of San Francisco, for exhibition purposes. This company also has the western agency.

The Thousand Islands Aero Club, theoretically, but Dr. Gibbons, practically, has an aeroplane ready for trial near Mineola. Finding the grounds at Garden City too rough and minus the promised suitable shed, Dr. Gibbons is having a tent made to house the machine and will probably make his trials from the Mineola side of the Plains.

Captain Baldwin Builds Aeroplane.

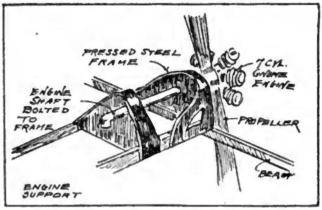
Captain T. S. Baldwin has built a biplane at the Curtiss factory. A feature is the use of a vertical surface on top of the main cell for lateral stability. First flights were made in it by G. H. Curtiss.

Paulhan Flying in New York.

New York, March 12.—The former mechanic, Paulhan, today began at Jamaica race track the first of an advertised series of daily flights up to March 20th. A crowd of several hundred waited until a few minutes before six to see a short flight of about 300 feet. The wind was given as the reason for not flying further. It has been arranged between the lawyers in the Wright-Paulhan suit that the latter may fly for one week beginning today under a $6,000 a week bond.

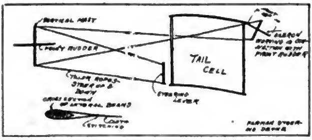
Yesterday two short flights of a couple of minutes each were made before a number of invited guests and newspaper men. It was given out that Paulhan would fly with his rear vertical rudder off in order to show that the same was not at all necessary in preserving lateral stability. But the rudder was on the machine when he flew and not even tied so as to make it immovable.

The Sketches Were Made, However



Wilbur Wright and his attorneys, H. A. Toulmin and Pliny W. Williamson, were present on both days.

Although the details of Paulhan's machine have been published, and Wilbur Wright and his lawyers yesterday inspected the Farman machine, today a newspaper representative who attempted to make a sketch aroused the irascible Frenchman to a fury and the torrent of overlapping words sounded like the open exhaust of his motor. President Bishop when appealed to did not seem inclined to explain matters and the gentleman of the press had to leave the enclosure.



Representatives of the Wright Company were invited on Friday by Clarence J. Shearn, attorney for Paulhan, to inspect today the Bleriot monoplane, sometimes operated by the Frenchman. They called, but were not permitted to inspect. Neither was Mr. Shearn present, as expected.

In the afternoon Wilbur Wright, with his lawyers, again applied for an opportunity to look over the Bleriot machine, but were refused admittance.

Paulhan came to New York from San Antonio, where his last flights were made. In his tour he has visited Los Angeles, San Francisco, Salt Lake City, Denver, New Orleans, Houston and San Antonio.

Motor Stops in Army Aeroplane.

San Antonio, Texas, March 2.—After three successful flights to-day by Lieut. B. D. Foulois at Fort Sam Houston, in the Wright aeroplane, the fourth attempt resulted disastrously. The rudder of the machine was wrecked and the life of Lieut. Foulois was endangered.

The flights were of 7½, 11, 21 and 15 minutes respectively. In the fourth flight this afternoon when the machine had just turned the southern end of the field and was headed north the gasoline feeder of the engine broke, cut off the power and the engine stopped. The aeroplane, which was at an elevation of about forty feet, fell to the ground and Lieut. Foulois was almost unseated. The rudder was dashed against the ground, breaking it off close to the body. The body of the machine was not damaged.

Meet for Dayton.

Definite and final plans for a big aviation meet in Dayton were made at a recent meeting of the International Dayton Aeroplane Club and the Aero Club. May 13, the anniversary of the Wright brothers' home coming celebration, has been set aside for the start of the meet, which will last several days. Both dirigible balloons and heavier-than-air machines will compete.

J. H. Klassen Monoplane.

One of the new machines on the Coast is that of J. H. Klassen. It is extraordinarily light, weighing only about 250 lbs. without operator. Chassis, three 20-inch wheel and skid combinations. Double covered planes 15 by 6 ft., 210 sq. ft. Curvature 2½ inches in 6 ft., arc of a circle. The planes are covered with paraffine paper pasted upon cheesecloth, making a drum tight surface.

The power plant is a Curtiss 20 h. p. 4-cyl., air cooled motor, driving a 5 ft. 8 in. propeller, 20 degrees pitch, Holley carburetor, battery ignition. Lateral balance is ehpected to be had by the sidewise movement of a normally vertical fin placed at an angle from a point over the operator to a point above the motor. A rear vertical rudder operated by foot control.

The rear horizontal rudder, 3½ by 8 ft., is controlled by lever operating wires over pulleys. The operator has a canvas seat.

In a trial of the machine the motor did not develop sufficient speed even with the exceptionally small propeller surface.

Many Machines On the Coast

Edgar S. Smith Monoplane.

The "Dragon-fly," an aeroplane built by Edgar S. Smith, of Los Angeles, Calif., is a monoplane of the Langley or following plane type:

Supporting Surface: Two sets of planes are used, four planes in all, each measuring 8 ft. by 5 ft. depth, making a total sustaining surface of 160 sq. ft. The rear planes are stationary, separated 6 ft. back from the forward planes and 18 in. lower. Front planes are each pivoted independently on a lateral axis at the normal centre of pressure. All planes have a curvature of 1 in 20. Planes are constructed of ¼-in. steel tubing and trussed to a mast in the center of the plane, both above and below plane. Ribs are of birch and slip in pockets in cloth. Cloth is varnished and coated with aluminum powder. The four wings weigh 60 pounds complete.

Framing: The body is of "V" cross-section, apex down. The main girders are of spruce 1 in. by 1½ in.; the cross struts are of ⅜-in. steel tubing, 2 ft. long. Tubing is flattened at ends and drilled for 3/16-in. bolts. One bolt is made to hold two tubing ends and four guy wire braces. The whole truss construction is braced with No. 18 spring steel wire.

Power Plant: The motor is secured to the forward end of the frame or body and is 12 in. under the forward planes and even with their front edge. The engine is a 2-cylinder, horizontal opposed, 2-cycle engine, air cooled. Complete it weighs 45 pounds and is rated at 15 h. p., at 1,200 rev. The bore and stroke are 4 in. It drives direct the propeller which is constructed of steel tubing with aluminum blades. The blades may be adjusted to different pitches. The present pitch is 4 ft. for a 6 ft. propeller at 1,000 rev. The pull has not yet been accurately ascertained but is estimated to be between 75 and 100 pounds. one tank is used for both gasoline and oil with a float feed carburetor, and gives satisfaction. Gasoline and oil is mixed at a ratio of 1/10 to 1/6 oil of motorcycle quality.

Running Gear: Three wheels, two in front and one in rear, are heavy bicycle wheels with steel rims braced to frame with ½-in steel tubing.

Control: The planes are set at a dihedral angle of 168 deg., while the body is covered with cloth forming a keel which reacts with the planes to tend to keep the monoplane on an even keel in good weather. When greater lateral stability is required, the front planes, each of which can be tilted independently of the other, are used. They are operated by two hand levers one on each side of the aviator's seat, which is just in front of the rear planes and inside of the enclosed keel or frame. Fore and aft stability is effected by tilting both forward planes as a unit. A vertical tail at the rear is controlled by foot levers.

General Description: The machine complete with operator weighs 190 pounds. Machine without engine, tank, batteries, etc., weighs 120 pounds, operator 150 pounds, making a total weight of 340 pounds, about 2⅛ pounds to the sq. ft. of surface. The length is 10 ft. width 17 ft., height, including propeller, 7 ft. The machine is easily dismantled and stored in a small space and has been carried around on the shoulders of the aviator. Mr. Smith's ambition is to build the smallest and lightest machine possible that will actually fly, and this is his first attempt. He hopes to build an aeroplane yet that an ordinary motor-cycle engine can drive through the air successfully.

Tests at the Los Angeles Meet with a Curtiss wooden propeller in place of crude metal propeller proved engine too weak to turn at proper speed and the machine was unable to get off the ground.

The George H. Loose Monoplane

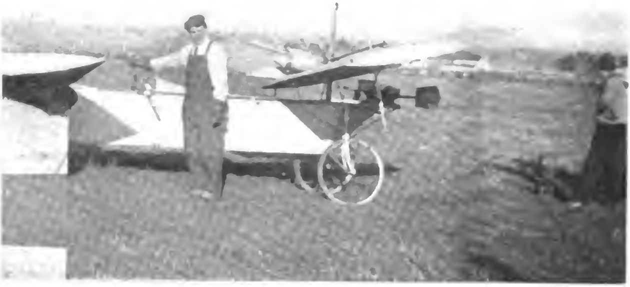
After being towed thirty-five miles over rough country roads, the Geo. H. Loose monoplane arived safely in San Francisco, and although the motor is not yet installed, was on exhibition at Balloon Park, where it attracted much attention while the "Queen of the Pacific" and the "City of Oakland" were being inflated, preparatory to the second race for the Portola Cup.

The monoplane is completed with the exception of the motor and attachment of the two rudders.

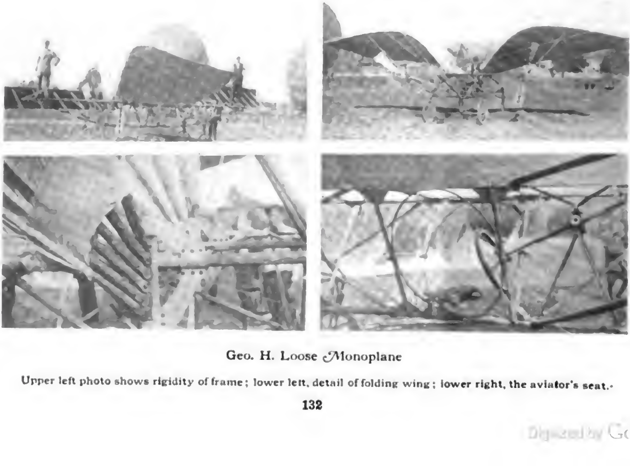
An advantage that can readily be appreciated on this machine is that when not in use the supporting planes and propellers can be folded back against the body, thus allowing it to be driven through the street or kept in a garage, taking up no more space than an ordinary touring car.

The Loose monoplane weighs less than 200 pounds without the motor, which will be a 20-25 horse-power one, weighing about 100 pounds, the entire weight then being about 300 pounds.

The sustaining surfaces have an area of about 200 square feet. The propellers are 6 feet in diameter, and have a 20.5 degree pitch. The propellers are built of 18 gauge special seamless drawn tubing, draw-filed, on which are attached at different angles six castings of special alloy, for each blade. These preserve the uniform pitch throughout the blade. On these propeller ribs are riveted the aluminum surfaces after they have been expanded and shrunk to the proper pitch. The blades are set in special alloy hubs which run on R. I. V. ball bearings.



Edgar S. Smith Monoplane



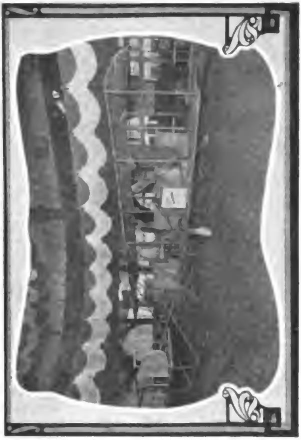
Geo. H. Loose Monoplane

Upper left photo shows rigidity of frame; lower left, detail of folding wing; lower right, the aviator's seat.

"Baddeck II" in Flight

Klassen Monoplane
(Lateral Balance By Hinged Fin)

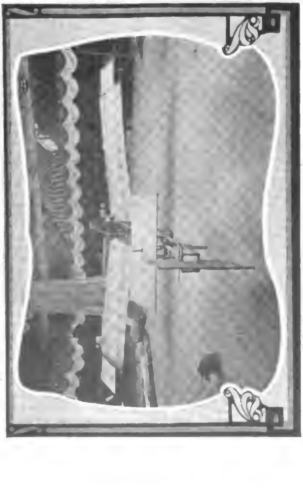
Some of the Machines Seen



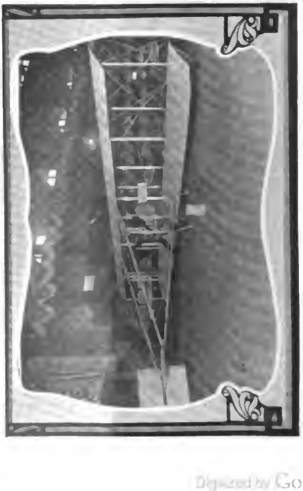
Shneider Wright-Type

Erickson Bamboo Biplane

Photos by Levick

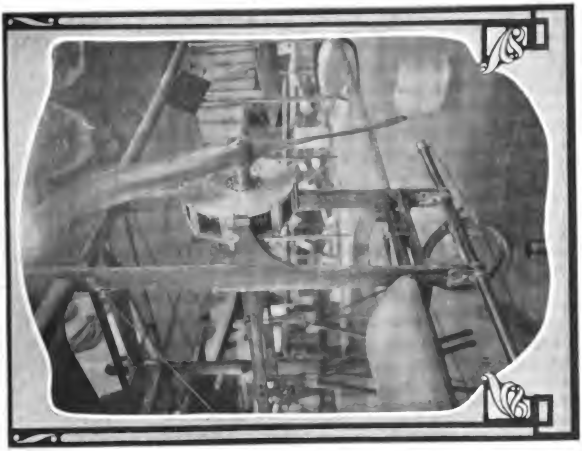


Morok Monoplane



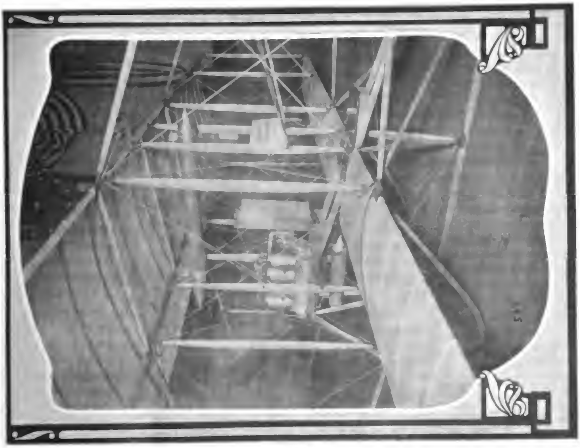
Herring-Burgess Biplane

at the Boston Show

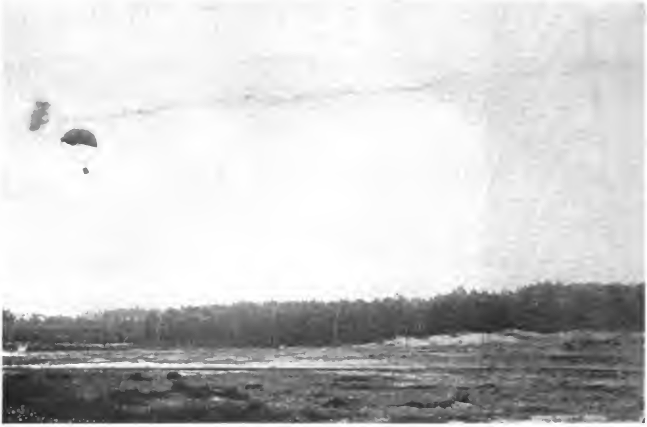


L. A. W. Motors Co. Revolving Two-cycle Air Cooled Motor in L. A. W. Aeroplane

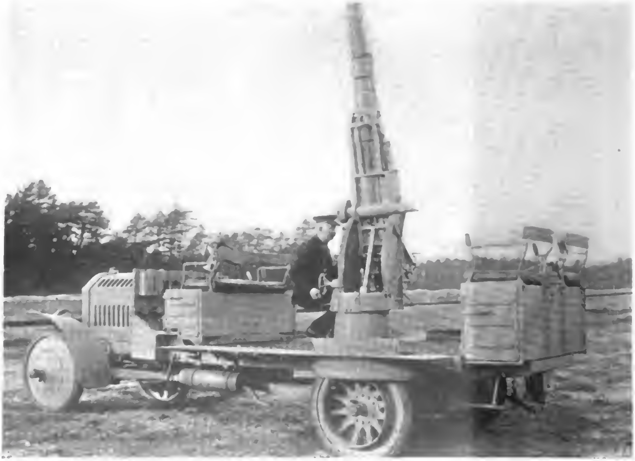
Photos by Edwin Levick



Herring-Burgess Power Plant



A Balloon Struck by a Shell from Krupp Gun
Note trail of smoke showing path of shell.



A Krupp Gun for Aerial Defense, on an Automobile Truck

The transmission is by half-inch steel cable direct from the crank shaft, driving straight on one side and crossing on the other. The bronze pulleys which receive the cable are machined to mesh, each strand of cable allowing no chance for slip and yet allowing the cross drive without the usual wrenching and wearing that a chain gets.

The horizontal rudder is in front, the area of which is 15 square feet. The vertical rudder is in the rear with an area of 10 square feet. The sustaining surface, which is a rubber sheeting, is attached to twelve ribs, six on each side. One end of each rib is joined with a carden joint to a shoulder, which is securely fastened to the square frame of the machine. The rest of the body is triangular. Fourteen guy wires are run from the first ribs of the supporting planes to a ring which is connected with a screw at the forward end of the body. By turning this screw the planes are drawn as taut as a drumhead, and by reversing the screw the guy wires can readily be removed, allowing the planes to swing back against the body. Guy wires also run from different intervals on the ribs to the keel of the machine. All guying is done with No. 21 high carbon piano wire.

The wheels are made with extra long hubs. The front wheels are 26 inches in diameter. The rear ones are 20 inches in diameter. The control consists of one wheel, the shaft of which runs through four bronze bearings in an aluminum casting and an 8-inch bronze pulley between the two centre bearings. The pulley is fixed to the steering wheel shaft, and at the centre of the casting which is in line with the centre of the pulley are the bearings for the casting which permits the wheel to be moved up or down. This motion controls the horizontal rudder through a cable.

The steering cable, which connects the vertical rudder in the rear, passes through the casting bearings, which are hollow, and fastens to the pulley. By turning the wheel to the right or left the vertical rudder is so actuated.

Hudson-O'Brien Monoplane

BY CLEVE T. SHAFFER.

John W. Hudson and C. O'Brien, of the Pacific Aero Club, have almost completed their large monoplane, which closely resembles Bleriot's. Only a few minor touches remain to be made before trials.

A long triangular body carries at its rear end a fixed vertical plane and the vertical rudder. It also carries and bisects a horizontal surface, and the horizontal rudder or rudders. At the front this body is solidly affixed to four uprights, the wheels, equipped with shock absorbers, being pivoted to the two outmost, and the motor frame and motor being placed high up between the inmost.

The motor, of Mr. Hudson's manufacture, is a revolving five cylinder, weighing 125 pounds, including frame, and is rated on piston displacement, according to their figures, at 37 horse-power at maximum speed. It revolves in a horizontal plane and drives by a roller engagement a vertical sprocket carried on one end of the very short propeller shaft.

McAdamite is used wherever possible. Ignition is by a chain driven magneto.

The planes, 19x7, are double surfaced and have about the same curvature as the Wrights'; the head resistance seems a bit large, however. Though completed, they are not yet attached, so am unable to give angle of incidence, probably 1 in 10, and placed at a slight dihedral angle.

The laminated propeller is 7½ feet diameter, 4 feet pitch.

Total weight, 650 pounds. Total surface, about 260 square feet, not including small rear surfaces.

The operator's seat is placed between the frame members, though not as far back as in the "Antoinette." Vertical control is by a lever, with quadrant and release, on the right.

Horizontal control is by a wheel in front of the operator, the end of the wheel post being pivoted to allow of motion to either side. Turning the wheel operates a knuckle joint, and a horizontal continuation of the post acting as a drum will warp the wing tips by cables.

A novel feature is the use of thin strap iron for guying instead of wire, as it is simply nailed, and no provision is made for tightening it will no doubt be discarded after the machine has made some hard landings.

On the whole the makers are deserving of much credit, and it would seem to the writer that this if properly handled will be the first dynamic machine on the Coast to get off the ground.

Twining's Ornithopter Experiments

BY CLEVE T. SHAFFER.

The ornithopter of H. La V. Twining, of Los Angeles, illustrated in the October number, has been tried out. Mr. Twining states:

"I was able to bring a 1,000-pound pull to bear on the wing, and developed 30 pounds reaction under each wing, where I needed 125 pounds. I could beat the wings 42 times a minute. It weighs 110 pounds.

"The experiment demonstrated that the wing is not broad enough, that the centre of gravity is too low, that a 4,000-pound pull is needed at the wing in order to develop a 125-pound reaction on the wing. I could beat the wing through 18 feet at the tip with only an 18 inch movement between the hands and feet, having a leverage of 5 to 1, against the wing. I am going to change the leverage so I can get a 4,000-pound pull on the wing, drive it through 6 feet at the tip, with 18-inch movement between hands and feet, and drive it three times as fast, thus developing nine times the reaction. I hope to get off the ground.

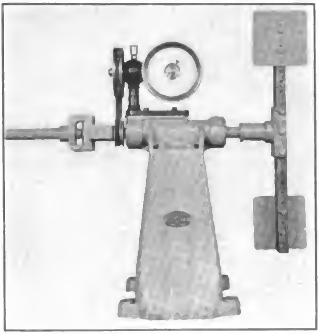
"As soon as I develop the principle I shall install a motor. At present myself and the Eaton Bros. are building a monoplane, and have applied for patents for a new method of control."

News in General

Fan Dynamometer.

The work of making horsepower tests of aeronautic and other internal combustion engines has been greatly simplified and the cost reduced by the production of the fan dynamometer shown in the accompanying illustration, which has been placed on the market by Joseph Tracy, consulting engineer, 116 West 39th street, New York.

This standard type fan dynamometer can be employed in testing motors on the block by making suitable connection between the jointed dynamometer shaft and the motor shaft, and it can also be used to test an aeronautic motor in position in the frame by dismounting the propeller and substituting for it an extension shaft connected to the jointed shaft of the dynamometer.



The standard dynamometer is designed to test motors of moderate power, but by the use of fan blades of greater or less area, and suitable tachometer scales, the range of power absorbtion and measurement can be varied within wide limits.

The apparatus consists essentially of a metal standard carrying a horizontal steel shaft mounted in large ball bearings and provided at one end with a universal joint for making suitable connection to the motor under test and carrying at the other end an overhung two-bladed fan, as shown. On the dynamometer shaft a small pulley fitted to a boss on the rear of the universal joint is belted to a larger pulley on the special tachometer mounted on top of the dynamometer shaft housing.

The tachometer of the standard fan dynamometer is provided with a double scale and single pointer, the inner scale showing the revolutions per minute and the outer scale the horsepower developed. The r. p. m. scale is graduated progressively by divisions of 20 revolutions from 200 to 2,000 revolutions. The h. p. scale gives a minimum reading of 1 h. p. at 400 r. p. m., and a maximum reading of 105 h. p. at 2,000 r. p. m. Consequently, at all ordinary rates of motor speed a simultaneous reading of r. p. m. and h. p. can be obtained without any computation.

Features of this apparatus that will commend themselves to builders of motors, aeroplane and dirigible balloon manufacturers and experimenters include: Simplicity, low first cost, compactness, durability and freedom from possible breakdown or interruption of tests, ease with which readings may be obtained by unskilled help, and capacity for continuous tests for long periods without constant attention.

Patents have been applied for on this apparatus.

St. Louis Gets Balloon Race.

St. Louis has been selected for the place; October 17, the time, at 4 o'clock in the afternoon, for the Gordon Bennett balloon race. On this night and those immediately following there is full moon.

England has entered one balloon, making 15 in all. (See list in March number.)

ELIMINATION RACE.

In the issue of November, 1907, AERONAUTICS urged the holding of an elimination race to select America's representatives. This plan was intended to avoid any charge of favoritism that might otherwise lie against the Aero Club of America, for the club should emulate Caesar's wife, and at the same time secure the best balloonists. This year the club has adopted the suggestion and an elimination race is planned for September 17 at Indianapolis. Applications to enter the first race must be filed with the Aero Club of America before September 1, accompanied by a check of $100 and a detailed description of the balloon and equipment.

Patents.

The month of February has been somewhat remarkable for the small number of patents which have issued from the Patent Office. But four have come through during February. The "Patent Office Gazette" contained no aero patents for the weeks ending February 8, 15 or March 1. This indicates that for some reason many are failing to pay the final fee which allows the patents to issue.

William E. Goble, Dinuba, Cal., No. 945,514, Jan. 4, 1910. Aerial machine. A helicopter consisting of a body and motor rotating vertically journaled shafts at the upper ends of which are the propellers. These are provided with flexible blades and means are shown to raise or depress them with relation to the hubs and also to change the pitch angle. A propeller and rudder are provided at the extremity of the craft as a means for steering and propelling.

Edwin J. Lester and William G. Best, Chapham, England, No. 946,673, Jan. 18, 1910. Airship and aeroplane. Running gear, the wheels of which are provided with fans or paddles and so connected together in pairs that they are adapted to swivel for the purpose of raising, lowering, steering and propelling the apparatus.

Arthur Crane, Berkeley, Cal., No. 947,802, Feb. 1, 1910. While the title calls for an airship, it is actually a helicopter construction, consisting of superposed lifting propellers connected to independent motors so that the relative speed can be varied to steer the machine without the use of a rudder.

Vincent Wisniewski, Berlin, Germany, No. 948,121, Feb. 1, 1910. Flying machine, airship and the like, comprising a propelling apparatus applicable thereto consisting of driving wheels located along the frame work; driving mechanism imparting alternate rotation to the same; and shutter like wings driven by cables guided over and driven by the driving wheels; the wings being located throughout the distance between the driving wheels.

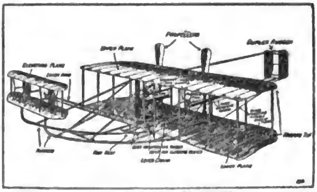
James Beard, Veterans Home, Cal., 950,427, Feb. 22, 1910. "Aerial Machine," of the helicopter type, having a main frame adapted to carry a motor, with a vertical parallelogram hinged to the front and a similar parallelogram at the rear, provided with a rudder. At the sides extend horizontal planes hinged at their forward ends and capable of being tilted up or down. A vertical shaft journaled to the main frame operates a propeller composed of a series of arms hinged to the shaft one above the other and capable of extension by centrifugal force.

Jesse A. Turnidge, Webb City, Mo., assignor to Commercial Aerial Navigation Co., Webb City, Mo., 949,810, Feb. 22, 1910. "Air-Ship," the characteristic feature of which consists of wings at each side composed of members hingedly connected together, collapsible on the vertical stroke and means for opening same on the down stroke Operated by lazy tongs and toggle levers.

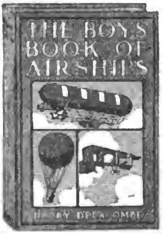
Mr. Harmon has secured the use of some 500 acres near New Brunswick, N. J., for use as flying grounds. He will erect a workshop and shed.

New Books.

"Airships in Peace and War" is the title of a new edition of R. P. Hearne's work "Aerial Warfare," in which seven new chapters have been added. When the first book was written a fifteen-minute flight was a great one. Now flights of such duration do not obtain mention. The new chapters cover the achievements of the past year, with titles as follows: The Commercial Uses of Airships, Aeroplane Progress in 1909, Aeroplane Racing, Aeroplanes of the Year and Aeroplane Records, Future Developments in Flying Machines, the Wright Military Trials, Dirigible Balloons in 1909 and Airship Fleets of the World. Many new and beautiful illustrations have been added to the former fine collection. Sir Hiram Maxim has rewritten his introduction to include a comparison of the Wright and the French machines. The book is published by the John Lane Co., New York, $3.70 post paid.



DIAGRAMMATIC VIEW OF THE WRIGHT AEROPLANE



"The Boys' Book of Airships" is another new book, published by the Frederick A. Stokes Co., New York, at $2.00. The author is Harry Delacombe. The title is unworthy of the book. It is certainly not essentially a boys' book any more than Maupassant is an author for the Sunday School. It is an interesting history of the whole art for the "man in the street." To the layman it will give a good working knowledge of progress up to date in balloons, airships and aeroplanes. The construction and operation of all three classes of aerial vehicles is described fully in a most entertaining way. The work is profusely illustrated with fine half tones and drawings.

Either of these books may be obtained from Aeronautics, 1777 Broadway, New York, at the price named.

German Experiments Shooting Balloons with Special Guns

By Max A. R. Brünner

OWING to the high standard of applied science new inventions are constantly made in the German Empire. In this aeronautical age, on one side means for attacking troops are improved, and the same is done with apparatus to destroy these mediums of attack.

At the beginning of this year special machine guns were constructed for attacking aerostats, and then some types of armored automobiles. Later, new models have been turned out which attracted wide attention. They have been made by the well known Krupp concern, one with two wheels as a portion of a horse-drawn gun, the other mounted on an automobile chassis. To be effective such a gun must comply with the following requirements: Unlimited moving ability sideways, shooting under any angle up to the vertical, highest speed of the projectile or smallest time for flying, best possibility to hit the aim. It is also necessary that the vehicle can be at the desired spot at a moment's notice.

The horse-drawn gun hits an aim with certainty up to 8,650 meters distant and reaches a height of 5,700. The other model is stronger and is mounted on an open power wagon driven by a 50 horse-power engine. There are no spokes on the front wheels, but steel disks, while all four are fitted with solid rubber tires. All four wheels are connected with the engine and thus steep grades and rough ground can be overcome. It has a maximum speed of 45 miles an hour. On the platform seats for five men are provided and room for 62 cartridges.

The gun is mounted on a cast steel pedestal and can be completely turned round; also moved up and down. This is made possible by compressed air. The barrel has a bore of 7.5 cm. and is fitted with a brake operated with a liquid. The barrel is made to slide out by the expansion of the air after its bolts are removed. When it is extended a shot is fired automatically after which the gas pressure carries the barrel back to its aiming position. Interesting are the projectiles, which contain a burner ignited at the beginning of the flight in order to leave behind a path of black smoke. Its purpose is to leave a black path of smoke behind to indicate the path and to show whether the shot went too high or too low. The other burner comes into action after the balloon is hit and its fire ignites the gas. When an aerostat is hit by such a projectile it is completely wrecked while with an ordinary gun or shrapnel only the cover is injured. The gun itself weighs 1,065 kg.; the weight of the entire car is 4,300 kg. The horizontal range is 9 km.; vertically, 6,300 m.

Newark Aero Show

NEWARK, Feb. 26.—The aero division of the automobile show which has held forth the past week at the Essex Troop Armory was organized by the newly formed Aeronautic Society of New Jersey, a branch organization of the New Jersey Motor Club but under its patronage and enjoying the privilege of its rooms.

The only aeroplane shown was the Greene machine purchased by Wilbur R. Kimball and Frank E. Boland, on which experiments have been carried out at a field near Rahway. Movable vertical surfaces between the main planes act as rudders for steering right and left and also for obtaining stability. No tail is used. Good passenger flights have been recently made with this device.

The Wittemann Brothers showed a well finished glider, together with samples of various aeroplane fittings. Frank E. Boland exhibited his new 8-cylinder V aero engine. The Bosch Magneto Co. had on view their aeroplane magneto, Pennsylvania Rubber Co. aeroplane wheels and tires, Hartford Rubber Works Co. aeroplane tires, Warner Instrument Co. "aerometer." The Requa-Gibson Co. exhibited propellers. Seventeen models were shown by various local and New York men. C. E. Fisher, Newark representative of the Cadillac car, has given a cup for gliders, which was on exhibition, and has purchased the glider which has been exhibited here by the Wittemanns.

The Fisher cup for the best constructed model was awarded to John Carisi and William Piceller. W. Morrill Sage, the model builder associated with A. Leo Stevens, won honorable mention.

Are the Wrights Justified?

UNFAVORABLE criticism of the Wright Brothers' action in bringing suits is rampant. Is such criticism just? Will a verdict favorable to the Wrights hinder progress?

The Wrights are not preventing anyone from inventing a new device for obtaining stability. Will not inventive faculties be stimulated?

At any rate, it is pointed out, there are precedents which cast light on the controversy. The majority of automobile manufacturers in this country are paying royalty to owners of the Selden patent. Those paying royalty do not seem to be grumbling. The association of licensees under this patent are even making advertising capital out of the very fact. In Europe, all automobile manufacturers are paying royalty to one manufacturer-inventor.

The stand taken by the Wrights is set forth in the following document:

"When a fishing vessel returns to Gloucester after a terrible season on the banks of Newfoundland, would it be to the advantage of that town if every inhabitant could carry off as many fish as he wished without paying or even thanking the men who brought the cargo to port after so much labor and danger?

"Experience has taught the world that such a policy is not really to the public interest. Yet when a couple of flying machine inventors fish, metaphorically speaking, in waters where hundreds had previously fished for thousands of years in vain, and after risking their lives hundreds of times, and spending years of time and thousands of dollars, finally succeed in making a catch, there are people who think it a pity that the courts should give orders that the rights of the inventors shall be respected, and that those who wish to enjoy the feast shall contribute something to pay the fishers. After the Wright brothers had proved that human flight was not the impossibility which the world had believed it to be, and had shown how it could be attained, dozens rushed to appropriate the invention without offering to pay the inventors one cent out of the thousands they were realizing from its use. The inventors appealed to the courts for protection against such an outrage, and their petition has not been in vain.

WILL NOT SPOIL INTERNATIONAL MEET.

"However, the owners of the patents realize that the world is intensely interested in this newly created art, and intend to exercise their rights with proper regard for the public wishes and public interest. It is not their intention to prohibit sport or spoil the international meet by restricting it to machines built by the Wright Company itself. But the meets have been made possible by an invention covered by patent, and their success depends upon the utilization of the lawful property of the owners of the patent. It is only just that in figuring up the cost of a race meet, a reasonable sum should be set aside to compensate the owners for the use of their property. If this is done, race meets can be held at which infringing machines of every style and make, domestic and foreign, can compete without hindrance. No one can truthfully say that any past action of the owners of this invention has been unreasonable, unwarranted or unjust. It is not the intention that any future action shall be unreasonable, unwarranted or unjust. So far they have been always the victims of injustice instead of the aggressors."

BISHOP SPREADS PESSIMISM.

The president of the Aero Club of America seems to persist in pessimistic proclamations to the press of the improbability of the international aviation meet being held in America. He is quoted in the *Tribune* of March 13 as follows:

"Cortlandt Field Bishop, president of the Aero Club of America, said at the race track yesterday that America would lose the international aviation meet for the Gordon Bennett trophy, won last summer by Glenn H. Curtiss, of Hammondsport, N. Y., if the Wright brothers should win their suit now pending against Paulhan.

"He said that all the foreign aviators of note had assured him by letter that they would not sign contracts to appear in this country until the suit against Paulhan was decided.

"'If Paulhan wins,' he said, 'they will be glad to compete. If he loses they do not care to place themselves within the jurisdiction of American courts.'"

Wilbur Wright proposes to enter the international meet himself with a specially built racing machine.

Strobel Has Flying Troubles.

Charles J. Strobel, the well-known airship impresario from Toledo, who bought the Aeronautic Society's Curtiss biplane, has been having troubles, real ones, the same being peculiar to aeroplanes. And anyone knows they're enough.

Without a real aviator, Charles F. Willard having joined with Curtiss, Strobel took the aeroplane to Tampa, Fla., from Los Angeles, in charge of Sam Tickell, or "Tickle," as he is known to fame. Tickell was assistant to Willard and knew all about the machine, except the flying part.

Somehow or other, although a half dozen would-be aviators were at hand, all anxious to try, no flights were made at Tampa and the charge that the machine was not set up properly was entered against the aforesaid Tickell, or Tickle. So to prove the machine *was* all right Samuel made a flight, of 300 ft., duly measured, but the machine went to the aeroplane hospital. After sundry discussion as to who should be the official bird-man, the "Golden Flier" itself took a hand, started "rough house" in resentment at strange jockeys and as a result is now in Toledo for replacement of various incidentals of its anatomy, if not to undergo a complete reconstruction. It is rumored that Mr. Strobel, not content with his title of "Airship King," is going to have a fleet, or flock, whichever is correct, of aeroplanes of various types in the near future.

CLUB NEWS

The **Aero Club of America**, a membership corporation, has been duly incorporated to take the place of the old unincorporated association of the same name. In a letter dated February 17, the "members" were notified of the forming of such corporation, and stating that those who did not indicate otherwise would be considered members of the new association. It was announced in this circular that the following are the governors and officers:

Governors—Cortlandt F. Bishop, James A. Blair, Jr., Philip T. Dodge, Charles Jerome Edwards, A. Holland Forbes, L. L. Gillespie, Alan R. Hawley, J. C. McCoy, William W. Miller, Dave H. Morris, Charles A. Munn and Samuel H. Valentine.

Officers—Cortlandt F. Bishop, president; Samuel H. Valentine, first vice president; Dave H. Morris, second vice president; Clifford B. Harmon, third vice president; Charles Jerome Edwards, treasurer; William Hawley, secretary.

On February 16th there was filed in the county clerk's office the certificate of incorporation of "Aero Corporation, Limited," with $500 capital stock. Cortlandt F. Bishop, Charles Jerome Edwards, A. Holland Forbes, Samuel H. Valentine and Alan R. Hawley are the directors. Subscribers to the stock are Dave H. Morris, 34 shares; Gen. Geo. Moore Smith, 33 shares; James A. Blair, Jr., 33 shares. The stock, under the plan recently adopted, is to be turned over to the membership corporation.

The annual banquet will be held at the St. Regis on March 24. The club rooms are now at 29 West 39th street, in the United Engineering Society building.

An **association** similar to the Aeronautic Society in New York is about to be organized in St. Louis, where 30 builders of air craft signed the charter membership roll, March 4. There were more than 50 people in attendance at the organization meeting. The organization adjourned to meet March 12 to adopt a name, by-laws and constitution. Thomas W. Benoist was appointed temporary chairman and L. S. Shapiro, temporary secretary.

As an attraction E. Percy Noel, new secretary of the Aero Club of St. Louis, was secured to give an illustrated lecture on practical air craft. This was well received and the temporary organization was promptly accomplished. At the close of the meeting Mr. Noel pointed out the importance of each member of the new association becoming a member of the Aero Club of St. Louis, as well, and showed the advantages.

Albert Bond Lambert, president of the Aero Club of St. Louis, was in New York at the time of the meeting, but was pleased to learn of the new organization upon his return and stated that the club would lend every possible aid to the inventors and builders' association, even to the extent of supplying grounds for their use, as soon as possible.

The latter part of last month L. D. Dozier, for nearly three years head of the **Aero Club of St. Louis**, tendered his resignation, and Albert Bond Lambert, first vice-president, was elected to the office of president. At the same time E. Percy Noel was appointed active secretary, Eugene R. Cuendet being honorary secretary. The club has established a new office at 304 North Fourth street, St. Louis, and is making preparations for the busiest year of its existence.

It is probable that the program this year will inclube first and certainly the international balloon race, a smaller club spherical race, two aviation meets and about 100 individual ascensions.

The **Aero Club of Illinois** has been formed in Chicago, with Octave Chanute as its first president. James E. Plew, the Curtiss agent, its first vice-president; second vice-president, Harold F. McCormick, of the International Harvester Co.; Robert M. Cutting, secretary; Charles E. Bartley, treasurer; Victor Lougheed, consulting engineer. The members are chiefly solid business men and it is hoped that great good will follow. Several members already have machines and others are prospective builders or purchasers.

The **University of Pennsylvania** A. C. has nearly completed its aeroplane and are awaiting an engine. This was built by the members, students at U. of P., from designs by Laurence Lesh. On March 4th the first glides this year were made with the modified Wittemann glider. So many are anxious to make flights in it that the applicants have been divided up into squads of six, and they are out every night. Arrangements have been made with automobilists to help in towed flights.

The **Aeronautical Society of Great Britain**, the oldest aeronautical body in England and one who devotes its whole efforts to scientific studies, is having much the same trouble as the Aero Club of America. The members are just beginning to wake up to the fact that they have no voice whatsoever in the working or the finances of the Society, and that their self-appointed Council "is a most unbusiness-like body."

The **Aero Club of the Carnegie Technical Schools**, Pittsburg, Pa., is one of the very liveliest of college organizations. Since the formation the first of the year, the membership has grown to eighty. This club is entirely under student control and while it has received no official recognition from the Carnegie institution, it is believed the club will be a factor in student activities. It is supported entirely by students, who at present are working with models. Later on glider work will be taken up. William J. Vance is president; William P. Field, secretary.

The **National Model Aero Club**, 282 Ninth Ave., New York, is the latest organization, primarily to promote the study of aeronautics by means of models. Its object will be to control and regulate all competitions throughout the United States, to promote exhibitions and contests. It is proposed to offer medals and cups for longest flights, best design and originality of construction of machines less than 6 ft. in their greatest dimensions. It is not intended by the organizers of this club to invade the field of, or antagonize the societies already formed but to co-operate in the development of the model.

Membership is divided into two branches: senior and junior. The junior class is limited to boys under 21.

The officers and directors are: W. H. Crocker, president; W. Morrill Sage, 1st vice-president; C. W. Wilcox, 2d vice-president; F. S. Crocker, secretary; M. P. Talmage, treasurer. The other directors are A. Leo Stevens, Edward Durant, A. Armstrong and L. W. Houck.

STEVENS OFFERS CUP.

A. Leo Stevens has offered a handsome silver trophy for the longest flight made under the rules of the new club.

The **Aeronautic Society** has removed from Morris park to the new grounds on the Hempstead Plains, L. I., at Mineola. Three members have their machines there now: Dr. William Green, who is daily expecting to make first flight with the machine sold for exhibition work to Auchinvole, Botts & Crosby, of San Francisco; and Messrs. Diefenbach and Rosenbaum.

Plans are now being prepared for the first shed, 40 ft. wide by 100 ft. long, to be erected on the acre leased by the Society adjoining the fair grounds.

Regular members' meetings are held on the 2d and 4th Thursday nights of each month at the permanent town headquarters, 1999 Broadway, New York.

HUDSON MAXIM, NEW PRESIDENT.

The annual meeting was held on February 24, the following officers being elected for the ensuing year: president, Hudson Maxim; 1st vice-president, Lee S. Burridge; 2d vice-president, William J. Hammer; 3rd vice-president, Louis R. Adams; secretary, Wilbur R. Kimball; treasurer, Clarence F. Blackmore; assistant secretary, Alva D. Lee; directors, Thomas A. Hill, Lee W. DeForest, Carlos De Zafra, Hugo C. Gibson, Dr. Dwight Tracy and C. W. Howell, Jr.

The **Kansas City Aero Club** has now been incorporated with a paid up capital of $10,000, its membership including more than a hundred of the principal business and professional men of Kansas City, Mo. The club will take an active part in promoting aeronautical affairs and will hold various exhibitions and contests during the coming summer.

The officers and directors are: George M. Myers, president; Jay H. Neff, vice-president; Louis W. Shouse, secretary; W. F. Comstock, treasurer; John H. Bovard, Fred S. Doggett, E. H. L. Thompson, Jos. D. Havens and A. B. Richards.

The **Aero Club of Nebraska**, Omaha, Neb., is another new club. The new club starts out with twenty-nine paid up charter members. The charter membership list will remain open until March 15. Colonel W. A. Glassford was elected president of the club: J. J. Deright, vice-president; J. M. Guild, secretary, and Gould Dietz, treasurer. The directors are: Colonel W. A. Glassford, J. J. Deright, Edgar Allen, H. H. Baldridge, C. H. Pickens, T. R. Kimball, C. G. Powell, Gould Dietz and J. M. Guild. The articles of incorporation authorize a capital stock of $50,000, with shares at $5 per.

The **Atlantic City Aero Club** was organized at an enthusiastic meeting of the leading business, hotel and financial men held at the Marlborough-Blenheim on March 10, and plans were adopted in the rough for the holding at Atlantic City of the greatest aviation meet held since men learned to fly. The officers elected at Thursday night's meeting include the leading men of the resort. The following is the list: President, John J. White; first vice-president, Louis Kuehnle; second vice-president, Walter J. Buzby; third vice-president, Carlton Godfrey; treasurer, J. Haines Lippincott; secretary, Colonel Walter E. Edge.

The **Aero Club of Pennsylvania** is soon to have flying grounds. Louis J. Bergdoll, who bought the Wanamaker Bleriot, will probably erect his shed on the grounds selected and another will soon follow, erected by the club for the Philadelphia Aeroplane Company and the Robertson Aerial School and for the workshops of the club. This will be the beginning of the club plans to make the southern section a permanent centre of aviation activity. Nominations for officers for the ensuing year have been made as follows: For president, Arthur F. Atherholt; first vice-president, R. H. Beaumont; second vice-president, W. D. Harris and L. Bergdoll; treasurer, Lawrence Maresce; secretary, Clarence P. Wynne and Thomas B. Tuttle; assistant secretary, Carl H. Carson; for board of directors, Thomas T. Tuttle, Robert D. Carson, Clarence P. Wynne, Joseph Rhodes, Henry M. Neely, J. S. Clark, John Hiscock, W. D. Harris, L. Bergdoll and Rev. Geo. S. Gassner. The election of officers will be held at the next monthly meeting.

Wright-Paulhan
:: Opinion ::

On February 17th, as the March number was on the press, Judge Hand, of the U. S. Circuit Court, Southern Division, handed down his opinion on the application made by The Wright Company for a temporary injunction restraining Paulhan from using his Farman and Bleriot machines in this country.

Several hearings were had and briefs submitted. The Bleriot machine did not come in for any discussion, but only the Farman machines. Following are excerpts from Judge Hand's decision. Another hearing will be held March 16th.

The first part of the document is taken up with an argument on the means for warping and operating the rudder as described in the patent, quoting claim No. 7, the principal reliance of the complainants. He says it is not necessary, to constitute infringement that there must be a *constant* proportion between the degree of deflection of the rudder and that of the warping of the planes, as happens to be illustrated in the patent, but that *independent* movement of the rudder, as is actually in the Wright machine, comes within the patent. Judge Hand further says:

But the invention is not of a machine: it is not an invention of this means of so turning the rudder, but it is an invention of a combination of which this action of the rudder is a part. The statute authorizes such an invention, and if the combination be not a mere aggregation of old elements, as I shall try to show hereafter, then the precise means is of no consequence. In the patent-in-suit any skilled operator, who may serve pro hac vice for a "skilled mechanic," finding the automatic connection unsatisfactory, would at once disconnect it and attach the tiller rope to a lever or to a foot pedal which he could directly control.

As the examiner said in his letter of July 14, 1903, it is merely a matter of taste to attach the tiller ropes to the warping rope. The machine would be changed, but the combination would remain, because there would remain the means of causing the rudder to operate on the side of lesser incidence. The defendant urges very vehemently that the means must be the means specified. All that the specifications need contain is so clear a description that any skilled mechanic may use the invention. Where the change is only an obvious modification of the means specified, and a modification which retains each element of the combination contributing the same effect as before, the claim is not too broad which includes the modification.

The defendant alleged that under some circumstances the rudder is turned "toward that side of the drift nearer the angle of greater incidence," relieving him of infringement. The Judge admits that this may be the case for a short time, but decides that eventually, to restore equilibrium, Paulhan must use the method specified in the patent.

AILERONS AN EQUIVALENT OF WARPING.

I think there is nothing in the further objection that the Farman machine has two ailerons or flaps instead of a general helicoidal warp through the whole plane. The use of such ailerons is an obvious equivalent, and the only possible question arises from the fact that the ailerons cannot be given any negative angle. However, the essential of the combination is a differential in the marginal angle, and that is as well accomplished, though the lesser angle can never be less than zero, as though it could.

Considering, therefore, that the complainants carefully avoid limiting themselves "to the particular description of rudder set forth," I think that the detachment of the ropes from the warping devices, leaves the patent substantially the same as specified.

PATENT DEVICE A TRUE COMBINATION.

Before taking up the prior art the opinion discusses whether the Wright patent is of a true combination and whether it be merely a principle or abstract function, rather than a true invention.

As to the first, there can be no doubt whatever. The three elements are combined into an effect which is absolutely different from that which any one of them produce alone. The differential of angle instead of maintaining equilibrium would upset it. The rudder bearing upon one side only would not be sufficient. I am aware that the defendant contends that he can fly by steering alone, but I do not understand that he claims that in practice this can safely be continued permanently in machines of this type. In combination their result is not the aggregate of their separate results; it is the result of their mutual and antagonistic reactions.

The question as to whether the combination is not merely of a function is likewise plain. The combination is a definite adjustment of the material parts of a machine to secure a specified result. It is not the effort to patent a certain way of operating an aeroplane as the defendant insists, because the patent demands for its fulfilment certain physical parts in combination, able to work in the way prescribed. * * * The combination is * * * quite new, and the method of operating it need not be relied upon as the invention. No one before did in fact combine all these, and therefore no one gave to aviators the possibility of so operating.

PRIOR ART.

Finally, the novelty of the patent is considered, taking up in order the defendants citations. Some of these were from O. Chanute's book, published in 1894. The opinion states that these were not described fully enough to constitute valid anticipations.

D'Esterno: * * ½ It is impossible to say that this had in any sense the combination patented. Apparently the wings were to be fixed at a given dihedral angle, and the rear parts were merely flexible. It would be most dangerous upon the meagre and unsatisfactory evidence presented of what the actual machine was, to consider that it raised a reasonable doubt of an anticipation. Moreover, there is no proof that it was ever used or became more than a paper description, in which case, as I shall afterwards show, it cannot be regarded as an anticipation.

LeBris: This is a description of the same kind which is too inadequate to understand or to give effect to. So far as one can gather, the wings could be set as a whole at different angles of incidence to the wind. Here too there was apparently a flexible rear portion of the wings.

No one could possibly design either of these machines from the descriptions given, and it would be most extraordinary to suppose that they in any sense contained the combination of elements worked out after much experiment by the complainants, except by a mere chance, which in no sense gave them the necessary vital correlation upon which the patent depends. Moreover, it does not appear that in the case of either of these devices they were known or used in this country.

* * *

Monillard: There is a patent in this citation which is a part of the papers, and which I have examined. In no one of the nineteen claims is there anything which in any way even foreshadows the patent-in-suit. * * *

Mattullath. This was an abandoned patent containing full specifications which described six lateral and supplementary planes, three on a side, which were adjustable to different angles and were to be used to promote stability. At the rear was "a rudder secured on a vertical shaft." It does not appear whether this rudder was fixed or not, and the application does not include any use of the rudder to counteract the effect of the differential in the angle of incidence of the supplementary planes. At most Mattullath's designs were purely experimental, and did not give the public the benefit to which it was entitled, if the patent-in-suit is to be held to be anticipated and without consideration. * * * In the absence of some showing, which is not suggested, that the complainants borrowed any ideas from Matullath, his discoveries must be held to be no anticipation.

Zahm: Dr. Zahm in a paper in 1894 suggested the use of slats in the wings so as to create a differential in the angle of incidence, but it was clearly only an ingenious suggestion, and did not in the faintest degree show any comprehension of the complicated reactions and necessary correctives which would alone make the suggestion feasible. It was at most only a speculative suggestion never reduced to practical form, and fails as an anticipation, under the authorities mentioned under Mattullath.

Ader: The most serious attack upon the novelty of the patent-in-suit is raised over the machine of Charles Ader, a distinguished French engineer, a description of which is contained in Revue de L'Aeronautique for 1893. This being a foreign printed publication would under the statute be a valid anticipation if it foreshadowed adequately the patented invention.

Whatever may have been the merits of the machine described and actually made by Ader, it is quite clear that the patented combination was not included or understood by him. A reading of his first chapter, pp. 72, 73, is enough to show that he did not regard a rudder as essential. It is not correct to say, as the complainants do, that the vertical rudder was fixed in place. The rear wheel could be moved around a vertical axis, and was to be so moved to direct the machine upon the ground; "une quatrieme a l'arriere pour diriger l'aeroplane sur l'aire." "Quand l'aeroplane a un gouvernail vertical celui ci est solidaire de la roue d'arriere et manœuvre avec elle." The cut shows such a "gouvernail vertical," and we must assume that it was meant to be used and to be turned when the wheel turned.

However, it is also equally clear that the rudder was no part of the machine. M. Ader, with the characteristic clearness of a French mind, enumerates on p. 71 the four necessary primary parts of the machine: "Corps," "ailes," "force motrice," "propulseur," and these he takes up in four separate chapters. The first and shortest chapter concerns the "corps de l'aeroplane," and enumerates seven constituent parts of which the "gouvernail vertical" is not one. The only mention of it is in the sentence I have quoted in full. The whole matter may therefore be disposed of by the single consideration of whether the permissive suggestion of a rudder is to be taken as antcipating the patented combination. In so treating the defendant's contention, I shall assume that the machine was not an unsuccessful experiment, and that there was an adequate and detailed description of its construction, which showed that the lateral ends of the wings could be warped to different angles of incidence at the will of the operator.

The actual invention of the complaintants depends first upon the discovery of the necessary interrelation per my et per tout, as Mr. Justice Mathews puts it, in the citation quoted above, between the several parts which go to make it up. The mere coincidence of these parts by chance or as a matter of taste was in no sense an anticipation of their functional correlation, in understanding which the complainants' discovery consists and with it their invention. When, appreciating this necessary co-operation of all the elements, they specified their new combination, stating the essential necessity of their union and mutual reactions as the very essence of what they claimed, they invented something new. Ader fortuitously suggested the possibility, as matter of preference, of the third element, the rudder, and so shows conclusively that he did not in the lease apprehend the mutually dependent relations between wings and rudder. Thus, the patented combination is not in the least merely a new function of one possible form of Ader's apparatus, which experience might teach an aviator. If the invention be a combination at all, and not an aggregation, it is such solely by virtue of the apprehension of that vital relation of the parts, which Ader conclusively shows he did not have. Nothing than his description could more clearly show that with him the three were in merely non-functional aggregation; nothing can be more clear than that in the patent they are understood as in inevitable combination.

These are the only anticipations cited upon the defendant's brief, so that I may assume that he relies in fact upon only these, and not upon the others cited upon the argument. However, a few words will dismiss all the others in case I misunderstand his position.

Bechtel, Grapar, Johnson, Stanley, Marriott: These are all for lateral planes to dirigible balloons. The whole problem is so entirely different when suspension is effected by a reservoir containing a lighter gas than air, that there is not the least resemblance between the patents and the patent-in-suit. Assume the lateral balance of such a machine to be disturbed by a depression of the left side. It does not appear that an increase in the angle of incidence upon that side would not be adequate to restore it. The resistance so created might have some effect to turn the ship in that direction, but the inertia of the body and the friction would be presumably so great that the equilibrium would be restored without any use of the rudder. Besides, the equilibrium is insured by the fact that in such machines the centre of gravity is much below the centre of buoyancy, as in the case of a ship in water, and the planes were designed in all cases simply to cause the ship to rise or fall.

Boswell: This is a device to be attached to a dirigible airship, consisting of a plane adjustable in all directions used in connection with a vertical rudder. It is not apparent to me how the tilting of the plane in any of the positions in which it offered no plane of incidence to the drift would cause the ship to turn in one direction or the other, nor, how, if it did, it could even then turn it; but, whatever might be its action, it was specified simply as a steering device, and it is so wholly unlike the patent-in-suit both in structure and operation that I can see no similarity between them.

Davidson: This is an English patent, and is not in the least like the patent-in-suit.

Lampson: I cannot see any relevancy in this patent.

The importance of the issues involved in this cause must be the excuse for so extended a consideration. It is, of course, unusual to grant a preliminary injunction before any adjudication and without any acquiescence. However, when the right is not seriously attacked, and when the infringement is clear, the court should not hesitate to interfere. From the showing made I cannot doubt that the complainants first put into any practical form the system of three-rudder control. That there may be other systems is not to the point; let the defendant use those, if he will. Nor is it necessary to conclude that the complainants were the "first to fly." Upon that I decide nothing whatever, for it is not an issue in this case. All I do say is that I cannot find that any one prior to their patent had flown with the patented system, and that the changes from the specifications which the defendant has made are no more than equivalents which do not relieve him from infringement.

It is quite clear that for the complainants' protection a writ must go pendente lite, because, the defendant being a non-resident, who is here only transiently, there is no way in which they may insure themselves of the monopoly they have acquired except by preventing his use of it at once.

* * * *

The showing before Judge Hazel was substantially the same as that made here, and, as I said at the outset, I should have been disposed to say nothing upon the case except to refer to his opinion, had I not thought it fair to give to the defendant the reasons for reaching an independent conclusion in accord with his.

The **Portland Aeronautic Club,** Portland, Ore., has been incorporated with $10,000 capital stock. Incorporators, A. Crofton, M. C. Dickinson and George W. Joseph. E. Henry Wemme, Curtiss agent, is president.

The **Wilmington Aero Club,** Wilmington, N. Y., has been incorporated by R. Seidelinger, D. Snellenburg, G. W. Crowe and John A. Montgomery, with $100,000 capital stock.

What Has Become Of:

The Wright aeroplane to have been purchased by the Aero Club of America last spring for the use of members?

Charles J. Glidden's New York-Boston aerial line?

Albert C. Triaca's fine aeroplane?

The American Aeronaut?

The Prof. Todd-Stevens altitude balloon excursion?

Joseph Brucker's transatlantic balloon voyage?

The Baldwin dirigible that went to Germany?

Amherst's aerial signs for balloonists?

All the aeroplanes all over the country that were all going to fly in the "next few days" or weeks?

The great aero park at Springfield?

Many of the aero clubs which have been formed the past year, of which nothing more has been heard?

Columbia's intercollegiate federation?

Tillinghast?

Foreign Letter

Argentine.

Sr. E. Bregi, who has been making trial flights with a Voisin machine he purchased, near Buenos Ayres, has been able to keep up for 18 and 35 minutes.

A number of French aviators have arrived to take part in a meet.

Austria.

The Municipal Council of Vienna has voted $100,000 for the management of Stemfelder flying ground.

HOUR FLIGHT BY NOVICE.

Herr Wiesenbach has been able to fly for 56 minutes in his Wright biplane, on February 19, at Weiner-Neustadt.

The same afternoon Herr Wachalowski flew in a Farman for 15 minutes, and later 11 minutes with a passenger, winning $1,200 in two prizes.

A public subscription has been started to have an invention of Lieutenant Hailboun tried out. The invention is of a dirigible with a thin steel envelope. It is to ascend and descend without the use of ballast.

Belgium.

Georges Brichant has founded four prizes of $500 each. One is for a balloon contest and the others are to be awarded by the Belgian Aero Club to Belgian aviators carrying the greatest load for a given time.

Egypt.

HELIOPOLIS MEET.

The aviation meet held at Heliopolis, near Cairo, from February 6-13, proved a success; $35,400 were awarded in prizes, of which Rougier got $19,000 for his share, and Metrot won $10,000 of what was left. Both of these machines were Voisins.

Rougier was first in height contest, 255 meters; in the 5-kil. speed contest Balsan (Bleriot) was first in 4 m. 1s.; in the 10-kil. speed race, Le Blon (Bleriot) first in 8 m. 7 4-5 s.; greatest distance, Metrot (Voisin), 85.5 kil.; prize for accumulated distance, Rongier (Voisin) 153.5 kil. The accumulated distance of Mme. de la Roche was 20 kil.

De Riemsdyk (Curtiss) was placed sixth for the accumulated distance with 29.5 kil., and eighth for greatest distance in a single flight of 24 kil. This is pretty good for a novice.

Other competitors were: Latham (Antoinette), Grade (Grade), Duray (Farman), Sands (Antoinette), Hauvette-Michelin (Antoinette).

A school of aviation is to be opened at Heliopolis in the near future.

England.

Moore-Brabazon has increased his duration to 31 minutes in a flight for the British Michelin cup of $2,500 value for all-British machines.

Sir Hiram Maxim has completed a biplane, the special features of which are the three propellers, somewhat of a dihedral angle and a low centre of gravity.

The Aero Club of the U. K. is holding its annual aero exhibition March 11-19.

BUILDING BIGGEST AIRSHIP.

Vickers, Sons & Maxim is constructing the largest dirigible yet made, for the British war department. It is to be over 500 ft. long, will have two 200 h. p. motors and attain a speed of 45 m. p. h. It will easily carry 5 tons of explosives besides the motor, car and crew. It is of the rigid type.

E. T. Willows has been sailing at Cardiff a dirigible of his own design, 86 ft. long (envelope), with a capacity of 21,000 cu. ft. It is unique in that there are no elevating planes. Steering up and down is by tilting the two propellers on either side of the car containing the 30 h. p. plant which is hung about midway of the ship. This scheme is very similar to the American Riggs-Rice airship described in a recent issue of AERONAUTICS.

NEW GOVERNMENT AIRSHIP.

The new British Government dirigible "2-A" has had first trials. This resembles, in the shape of the bag, the "Clement-Bayard," except that there are but two pallonettes at the rear end. The bag length is 154 ft.; capacity 70,600 cu. ft. The car, 84 ft. long, is similar to those used on airships built by the Astra Co. The 80-100 h. p. Green engine, placed transversely, drives two pairs of 2-bladed 8 ft. 10 in. propellers, one set on each side of the car, so arranged that the propeller shaft can be tilted to assist in going up or down. A vertical fin is placed under the rear end of the envelope. Two triangular horizontal rudders are at either end of the frame and a vertical rudder at its extreme rear.

King Edward has granted the A. C. U. K. the right to use the prefix "Royal."

The Hon. C. S. Rolls flew for 15 minutes with his Short-Wright fitted with a horizontal tail.

The Bronze Medal of the Aeronautical Society, which is purely a scientific organization, was awarded to F. W. Lanchester, the author of two works on aeronautics, for the best paper during the year in "The Aeronautical Journal." This is an annual award. His article was entitled "The Wright and Voisin Types of Flying Machines: a Comparison," published in January, 1909. The society is about to publish a series of reprints of the most important aeronautical writings of Sir George Cayley, Wenham, Thomas Walker, Stringfellow, Pilcher, and so on. These little volumes will be illustrated and contain biographical prefaces. The first two, Cayley and Wenham, will be ready in March. The price will be but a shilling each or 5/6 for the series of six. The editing is being done by Messrs. T. O'B. Hubbard, secretary, and J. H. Ledeboer, editor of British "Aeronautics."

France.

GREAT FLIGHT BY AMATEUR.

George Chavez, the French soccer player, has been taking lessons on a Farman at Chalons. At his sixth flight, on February 28, he was in the air for 1 hour and 47 minutes, descending for want of gasoline. On his fourth trial he flew for 40 minutes.

Kuller, who succeeded Latham as the Antoinette instructor at Chalons, flew twice on February 27 in the teeth of a nearly 34-mile wind.

The Aero Club of France has decided that it will recognize pilots' certificates issued by the Kaiserlicher A. C. of Germany.

Several times on a recent flight at Pau, Bleriot stopped his motor during a flight and when near the ground started again and rose to the height of 20 meters.

At Havre on February 19, Molon flew twice cross-country distances of 30 and 40 kilometers.

Sommer made a recent flight in a strong wind and heavy rain with his own machine. He has carried a load of 462 lbs. with him in a test.

HOUR FLIGHT AT GOOD HEIGHT.

On March 2 Maurice Farman flew over an hour at Buc at a height of 175 meters.

On March 9 Rougier rose to 1,800 ft. at Monte Carlo, making great circles over the sea and villages between Monaco and Cape Martin.

The Aero Club de France has offered several prizes for machines driven by debutants remaining in the air at least one minute with motor stopped. It has been possible to use the $62,400 raised by *Temp's* subscriptions as follows: To buy two dirigibles and one Henri Farman biplane, one Maurice Farman biplane, one Wright biplane and one Bleriot monoplane.

Instructions continue of the military officers appointed to learn the new art of flying.

Germany.

The new German Clouth dirigible at Bickendorf, which made its first ascent, one of an hour, on February 4, has had a 3-hour trial. During March the German military arships, the Zeppelin I, Gross II and Parseval II will manœuver day and night under the direction of Captain Zens.

At Munich, the Parseval Aerial Navigation Co. is preparing for summer excursions to be made daily. The fare has been fixed at $55 for trips in the immediate neighborhood, and at $125 for trips to the Bavarian Alps.

Herr Echter of Landau has made a short flight in a machine of his own construction.

Herr Hilsmann has successfully flown several times, in the Essen section of the Lower Rhine Aviation Asso., on the Ruhn aviation field.

The German war office is at present experimenting with a 50 h. p. motor car carrying a 3-in. explosive shell gun with a range of 7,000 yards, designed by Krupp to be used as an airship destroyer.

On March 1 the Parseval V successfully covered 133 kilo. in just over three hours, from Bitterfeld to Tegel, near Berlin. Nos. VI and VII are being built.

The military authorities of Cologne are trying to prevent aerial evolutions in the vicinity for fear that spies will be able to study their fortifications.

On March 3 the Reichstag passed a resolution to establish a Government aeronautical institution to carry on practical experimental work with airships and aviation near Friedrichshafen.

Hungary.

On February 26, the Hungarian Aero Club was formed at the headquarters of the Hungarian Automobile Club in Budapest. Count Karolyi was elected president. The club is already preparing for an aviation meet to be held at Budapest June 5th to 15th. The prize fund aggregates $25,000.

Italy.

About the middle of February the new Faccioli biplane flew very successfully at Turin. The Wright machine has been out teaching an officer under the guidance of Lieutenant Calderara.

Norway.

A national aero club was formed at Christiana with Mr. H. Mohn, the meteorologist, as president. The club has applied to the International Federation for recognition, as the national representative of Norway.

Mexico.

Raoul-Duval, at Mexico, D. F., made several very successful flights in his new Bleriot monoplane the latter part of February. Though he only flew at a height of about 17 ft., his tests were the beginning of a series of experiments to determine how high a machine could arise in that altitude.

Russia.

$500,000 has been appropriated by the Russian Government for military aeronautics. A military aeronautical school is being opened. The budget calls for four or possibly five dirigibles and a Farman biplane, as the initial fleet.

Spain.

On February 18 the Espana made a 10-hour cruise to the entire satisfaction of the makers. On the 23d, an attempt was made to make the 10-hour night trip which was required by the Government before delivery, and the craft was injured during a fog by running into some trees. The damage necessitated her being shipped back to her shed, but she was repaired in a couple of days. She will soon be taken to her new headquarters in Spain.

Switzerland.

Captain Englehardt flew 3 miles on his Wright machine over the lake at St. Moritz, the 25th of February. This was the first long flight in Switzerland.

The Dufaux brothers, of Geneva, makers of the motor which bears their name, have had their first success with their aeroplane. It is a biplane, 8.5 m. spread; length 9 m.; surface 24 sq. m.; weight 175 kil.; 25-30 h. p. Anzani motor; propeller 2.1 m. diam., pitch 0.85 m., turns at 1,400. A triangular body extends back of the main planes, similar to the Antoinette machine. There are vertical and horizontal rudders quite similar to those of the Antoinette. The propeller is in front; the aviator sits just at the rear edge of the main planes. Lateral equilibrium is by wing tips. A wheel and post operate the controls; pushing the wheel and post forward and back steers up and down, turning the wheel operates wing tips and a foot lever steers right or left.

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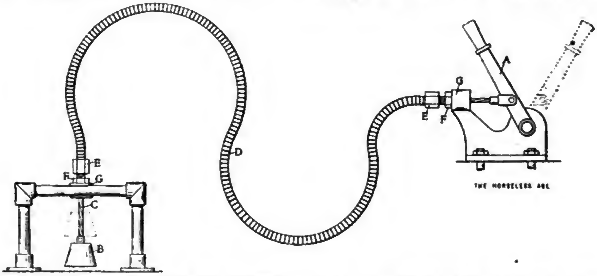
Trade Notes

BOWDEN WIRE FOR AEROPLANES.

The J. S. Bretz Co., Times building, New York, suggests the use of Bowden wire on aeroplanes. Bowden wire mechanism consists of two parts—a closely coiled and practically incompressible spiral wire, constituting what is termed "the outer member," and a wire cable, practically inextensible, threaded through the above, and termed "the inner member."

What It Does.—Previous to the introduction of the Bowden mechanism, the usual mechanical method of transmitting power in other than a straight line was by means of angle levers and rods, cables and pulleys, and other such devices, all of which necessarily involve considerable complication besides increased labor and expense in adapting them satisfactorily to the user's requirements. The Bowden wire mechanism dispenses with all these difficulties, while enabling power to be transmitted by the most tortuous route. The mechanism is complete in itself, and requires only that one member shall be anchored to a stop at each end and that the other member shall be attached to an operating lever at one end, and to the object to be moved at the other.



In the drawing above, D represents a length of Bowden wire sufficient to reach from point to point, loosely, round any intervening corners or obstacles. At C the inner member of the mechanism will be noticed emerging from the outer member, being attached at one end to the actuating lever (A), and at the other to the object to be moved (B), the outer member being anchored to fixed abutments (G G), which may be placed wherever found most convenient. Pull the lever (A), and the power or movement is at once imparted to the other end. When being actuated the mechanism at its curves will exhibit a wriggling movement, as the inner member attempts to reach the straight line of pull but is resisted by the outer member, which cannot shorten its length, anchored as it is at both ends. This movement should not be restrained; the virtues of the mechanism are best evinced when the curves are free. The dotted lines show the lever (A) in its actuated position, and the weight (B) or object to be moved correspondingly raised. E E are adjustable screws or stops, the extension or screwing out of which is equivalent to lengthening the outer member, and so compensating for any bedding down of the inner. F F are lock nuts for holding the adjustable screws in position. That is the common form of adaptation, but other forms are also in use. The mechanical expert will readily preceive that the ends of the *inner* member may be anchored, and the outer member then used as the medium for a *pushing* motion; or that neither member need be fixed in a stationary sense, but only fixed relatively to each other, so that while one pulls the other pushes, relative displacement thereby ensuing.

HARRIMAN MOTOR WORKS DELIVERIES.

The Harriman Motor Works, S. Glastonbury, Conn., are now up to date with standard sized propellers, suitable for their engines.

CATALOGUE OF EASTON ENGINES.

The Easton Cordage Co., Easton, Pa., has gotten out a most attractive catalogue of their 1910 motors. A real photograph of the 50-horsepower motor is used for illustration.

It also lists their standard Voisin Type aeroplane at $4,500, completely equipped, delivery in 90 days. A strong feature is made of the point that this is the only type of machine not infringing the Wright patents.

The company is also prepared to build to order laminated true screw propellers of special quality Honduras mahogany with over 80 per cent. actual efficiency guaranteed.

The type B-3 water cooled 50 h. p. motor, at 1,200 r. p. m., lists at $1,500. The 8 cylinders, 4 by 4 ins., are of cast iron, with special aluminum alloy head and shell in one piece, set at 90 degrees, 45 degrees from the vertical. Both valves are in the head, mechanically operated by one tappet rod, overhead rocker arm. Bearings are of phosphor bronze. Lubrication is by force feed oil pump, located in bottom of crank case, operated by crank shaft. One carburetor is used for all cylinders. Pistons are of cast gray iron ground to size. Aluminum crank case. The weight, including Bosch high tension, gear driven magneto, oiler, ready to run, except radiator, 275 lbs.

The 1910 engine possesses a number of noval and exclusive features, amongst which are to be especially noted head and shell cast in one piece, integral water jackets, valve actuating mechanism and the position of the spark plug.

MORE AEROPLANE TIRES.

The Pennsylvania Rubber Co., Jeanette, Pa., have begun the manufacture of aeroplane tires, and the Goodyear Tire & Rubber Co., Akron, O., have put on the market rubber fabric for surfaces. The G. & J. Tire Co., of Indianapolis, Ind., have developed two sizes, 20 and 24 inch. These are 3½ inches in diameter, larger than used on many light automobiles.

CHURCH COMPANY BUILDING MONOPLANE.

It is stated on good authority that within the next two months the Church Aeroplane Company, of Brooklyn, will have on the market a monoplane that will be listed in the neighborhood of $4,000, and designed to carry one aviator and sufficient gasoline for a continuous trip of 100 miles.

Flying models of this machine have been tested under all sorts of conditions, with most gratifying results. It is said that the automatic lateral stabilizing device used is more efficient than any-

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For the purpose of increasing the sphere of usefulness the membership should be augmented. Every additional member advances the general good.

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thing of the kind heretofore introduced. So far as can be judged from experiments with models, it is believed to be practically perfect.

The Church Company will shortly move into larger quarters. The company's business has increased so rapidly that its former factory capacity, which has already been several times doubled, is hardly equal to more than 40 per cent. of orders actually booked. The demand for flying models is enormous. At present these are wanted mostly by experimentors, and by merchants desiring to display them as novelties in their show windows; but already the buyers for toy houses and department stores are beginning to place their orders for November 1st deliveries, by way of anticipating the country-wide interest that will be displayed in the international aviation contests this fall.

Mr. E. Vail Church, now the president of the company, started the business last fall on a modest working capital, with the idea that it might prove a very profitable little private enterprise. It is to-day an incorporated company, with a capital of $600,000, and under the necessity of agai nmaterially increasing its factory capacity.

It is building a full size man-carrying machine, a modified form of the Santos Dumont type, for Mr. Frederick Pearson, of Boston, and will shortly commence work on its Langley-Church aeroplane, estimated to attain a speed of approximately 80 miles an hour, and which will be entered in the international contests.

PROPELLERS WANTED.

Propeller manufacturers please write Rev. Porter Hardy, Capeville, Va., and B. F. Crumling, Hellam, York county, Pa.

MODEL HELICOPTER FLYING MACHINE.

A new crucible steel toy called the "Hi-Flyer," the invention of a prominent Buffalonian, has just been put on the toy market for the spring and summer trade.

The feature of this miniature flying machine is its efficiency in high, long or speedy flights, its actual flight path varying from 600 feet to a quarter of a mile, the speed exceeding 30 feet per second.

The wings of the toy are constructed according to a new aerodynamic principle, which, it is claimed, gives to the machine an efficiency for surpassing that of any of the full sized aeroplanes or helicopters of the day.

THE "BOSCH NEWS."

The Bosch Magneto Co., 223 West 46th Street, New York, has started an interesting little magazine with the above title, telling of the good deeds done with Bosch magnetos. Two numbers have been issued thus far. Both have some fine illustrations of aeroplanes and airships. Results of the Rheims and Los Angeles meets are given. The American plant of the Bosch concern has an output of 10,000 magnetos a month, while the world product is 25,000.

INCORPORATIONS.

For incorporations of aero clubs see under "Club News."

The Cleveland Aeroplane Co. was incorporated under the Ohio state laws March 7th, $10,000 capital stock, to make, sell and lease aerial devices upon five patents now pending. The company manufactures scale models of the well-known flyers, which are sold outright or leased for advertising purposes. They also have an electrically arranged device along these lines to be used as a window display. Later gliders will be added to the line.

Metcalfe Multiplane Co., Driscoll, N. D. Pres., R. M. Metcalf; V. P., F. Jaszkowiak; sec., I. R. Matthews; treas., B. M. Finseth.

Long Beach Airship Spiraway Co., Long Beach, Cal., $35,000. A. T. Smith, A. F. Smith, R. I. Bisby, F. A. Knight and G. S. Bisby.

Automatic Equilibrium Airship Co, San Antonio, Tex., to manufacture aeroplane recently invented by Capt. A. F. W. MacManus, U. S. A.

Philadelphia Aeroplane Co., Phila., Pa., $20,000, laws of Delaware.

Alabama Aerial Tramway Co., to built and operate aerial tramways in Birmingham, Ala. Capital $200,000, paid in. Incorporators. J. K. Bartin, J. M. Venable, E. H. Thornton, J. D. Kirkpatrick, C. F. Wittichen, Guy R. Johnson and George H. Clark.

Sparling-McClintock Co., $25,000, Grafton, Ill., to manufacture a monoplane designed by J. N. Sparling.

MAXIM BUYS WITTEMANN GLIDER.

Hiram Percy Maxim, of Hartford, Conn., has purchased of the Connecticut Aero Company, of Hartford, a Wittemann biplane glider. The machine is of the usual biplane construction, having 22 ft. lateral spread of planes, and a large rear rudder with both vertical and horizontal members. The weight of the machine is sixty pounds, and represents the latest design in gliders.

It is the first machine to be purchased by a member of the Aero Club of Hartford, of which Mr. Maxim is president. It is expected that many more machines of this kind will be purchased by the members during the summer, as a means of acquiring practical experience in the manipulation of aeroplanes. Later on it is the intention to buy some of the well know motor aeroplanes.

An aviation field has been secured in Hartford, on the east bank of the Connecticut river, on the large meadows, which are unsurpassed for flying experiments. G. E. Lucas, manager of the Connecticut Aero Company, has provided an aeropaine garage where exhibits and instructions in gliding will be given during the coming summer.

Albert E. Ouellette, of Sanford, Me., has built a biplane in which he has installed a Harriman Motor Works 30 H. P. engine, and is at present educating himself to the control of the machine by running it along the ground and taking short jumps. Henry Lawrence Call, of the Aviation Co. of America, has purchased a 50 H. P. engine for his airship, and the Harriman Co. is building a special propeller by which Mr. Call expects to get the same thrust with our 50 H. P. engine as he was able to get with two 30 H. P. engines used in his first experiments. Louis G. Erickson, of Springfield, Mass., who showed his biplane in the Boston show (this plane being completely built of bamboo and being exceedingly light in weight but strong in construction), has used a H-F propeller in his experimental work, but the automobile engine he was using of 20 H. P. was too high in weight, and would not run well without a flywheel. Mr. Erickson has ordered a 30 H. P. aviation engine on March 10, and will have his motor installed, ready for further experiments by March 16th.

:: Exchange :: and Forum

1,000 LBS. THRUST WITH 50 H. P.

100. Can you advise me if I can find or have, constructed a propeller sustaining a heavy thrust, say, of about 1,000 lbs., and if a 50 h. p. engine can easily carry same?

Where can I get the data as to the pressure per sq. ft. on an 8-ft. propeller, 10 to 12 feet pitch, running 750 to 1,000 r. p. m.?

Answer: No propeller now in use will exert a thrust of 1,000 lbs. with 50 h. p. They generally give 6 to 12 lbs. per h. p. You do not specify whether the pressure per .sq. ft. is to be calculated on the *blades* or on the area *swept over.* It will probably be about 2 lbs. per sq. ft. on the latter, but the pitch, perhaps, is too great. See AERONAUTICS, also for June, 1909, p. 178; August,

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1909, pp. 46 and 71; and September, 1909, p. 99, for theoretical formulæ to design propellers. See also Maxim's "Artificial and Natural Flight" for practical experiments on screw propellers, and November, 1909, AERONAUTICS, p. 174.

A propeller might be built to thrust 1,000 lbs., but in order to get this thrust with 50 h. p. the propeller would have to be very large. This is the problem of the helicopter on which a number of inventors and scientists have been working for years.

Cornu Brothers got 880 lbs. lift with two 2-bladed propellers of 6 meters diameter at 260 r. p. m., with a 50 h. p. motor. The blades had 4 sq. m. surface. See AERONAUTICS for April, 1909. See also the July, 1908, number, p. 20, where the lift was 24 lbs. per h. p., and May, 1908. The gyrating planes of the Breguet machine gave a lift of 1001 lbs. It is also stated that these gave a thrust of 1,056 lbs., using 37-38 h. p., planes rotating at 1.8 r. p. s., with motor at 1,080 r. p. m. See AERONAUTICS for September, 1908. Emile Berliner states that he got a lift of 360 lbs. with a 17-ft. propeller making 150 r. p. m., using about 30 h. p. of an Adams-Farwell rotary motor. See AERONAUTICS for October, 1908.

Otto G. Luytles, of Baltimore, obtained 700 lbs. thrust with two superposed 4-bladed 34-ft. propellers, having 800 sq. ft. of canvas blade surface, from 20 b. h. p. J. Newton Williams got 430 lbs. with 19 b. h. p. He used two superposed 2-bladed propellers, 16 ft. 8 ins. diam., 64 sq. ft. blade area, or 22 plus lbs. per h. p. Prof. W. H. Pickering, of Harvard, several years ago, attained 430 lbs. with 20 b. h. p., using a single 2-bladed propeller, 21 ft. diam.

PIANO WIRE DATA

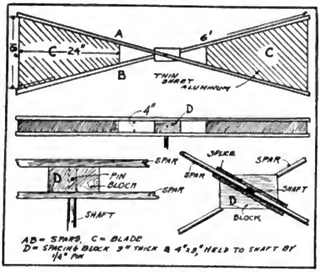
Following will be found a valuable table of the sizes, number of feet per pound, and breaking strain for each size:

No.	Diam. in inches.	Ft. per lb.	Breaking strain in lbs.
000	....	....	17
00	.0087	5138	21
0	.0093	4564	24
1	.0098	3973	27
2	.0106	3415	31
3	.0114	2955	35
4	.0122	2581	41
5	.0136	2026	52
6	.0157	1553	68
7	.0177	1221	86
8	.0197	995	106
9	. 216	755	128
10	.0236	690	152
11	.0260	571	183
12	.0283	479	221
13	.0303	415	254
14	.0323	368	287
15	.0342	328	318
16	.0362	292	351
17	.0382	263	390
18	.0400	240	426
19	.042	217	463
20	.044	197	503
21	.046	180	540
22	.048	168	584
23	.051	148	648
24	.055	128	745
25	.059	108	838
26	.063	95	941
27	.067	85	1049
28	.071	75	1158
29	.074	69	1268
30	.078	62	1389

A CHEAP PROPELLER.

101. As I am working on a flying machine, I would like to have a drawing of a propeller. I will use a gas bag. I want a propeller to draw about 200 lbs. through the air. I want to use this propeller on a ⅝-inch shaft front of machine. I want a propeller similar to that used by Beachey. I use no engine. My gas bag will only be about half as large as Beachey's. Will you please give me some instructions how to make this propeller? The machine will be about 10 ft. long.

Answer: A gas bag 10 ft. long shaped like Beachey's would lift less than 10 lbs., as it would contain about 100 cubic feet of hydrogen, which would lift 7 lbs. As to propellers, within certain limits the larger the better, i. e., more efficient. The pitch would depend on the velocity of revolution, which would depend on the power of the man and the way it is geared. A simple and easily made light propeller is shown in sketch. If the propeller is 6 ft. in diameter, the pitch could be 4 ft. and the velocity about 200 r. p. m. (The proper velocity could be found only by trial.) See also references given in No. 100.



CENTER OF PRESSURE.

102. For plane surfaces, Joessel's formula is $D = L \times (0.2 + 0.3 \sin a)$ where L is length of plane fore and aft and a is angle of inclination and D is distance from front edge. This formula is not true for small angles. Langley, in "Experiments in Aerodynamics," Chapter VII, gives results of experiments on c. of p. (Apparatus used not very accurate.) W. R. Turnbull, in Sci. Am. Supplement, Jan. 30, 1909, gives results with various surfaces using a device similar to Langley's at the mouth of a wind tunnel. Matthew B. Sellers gave practical data on four different surfaces in the March, 1910, number of AERONAUTICS. Mr. Sellers' experiments were with curved surfaces and the device used more accurate than Langley's.

Other references are: A. Rateau, in "Aerophile," Vol. 17, p. 338, who gives variation of position of c. of p. on flat and curved surfaces as determined by experiments; A. Goupil, in "Aerophile," Vol. 13, p. 207, gives calculations to show how c. of p. is determined; M. de Cantelou considers position in "Etude sur l'Aviation;" Major Baden-Powell, Sci. Am. Sup., Vol. 64, p. 90; J. D. Fullerton, "Aeronautical Journal" for July, 1897; Joessel in "Memorial du Genie Maritime," 1870, derives above given formula; Kummer, "Berlin Akad, Abhandlung, 1875-6.

WANTS PROPELLER.

103. You will probably obtain much better results by buying a propeller with a guarantee of a certain number of pounds thrust, after having figured the amount you will need to get off the ground, from one of the advertisers in AERONAUTICS, than to spend your time and energy, without the proper appliances, trying to evolve something better.

WRIGHT PATENT VS. CURTISS TROUBLE.

104. Should the Wright patent hold good, there is no reason why Aeronautics should suffer as far as law suits on controls are concerned. Herewith is a drawing of an aeroplane control which I invented over eight years ago, and have used it successfully on small models of both mono- and biplane type. At that time I did not believe it worthy of patent, and as no patent can be had upon it now, anyone may use it without the danger of infringement. The Wright patent is based upon changing the angle of incidence, whereas in this means of control we only increase or decrease surface. It is not necessary to use all the de-

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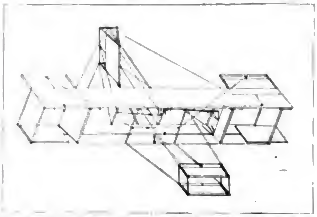
vices, as in the drawing, upon one machine. I put them all in the drawing to save space.

Description is as follows: Two main superposed surfaces. The uprights are pivoted so that the upper surface may be carried to either side, forward or backward, thereby changing the centre of gravity. For further transverse control the upper surface is mounted upon suitable rails so as to be extended beyond the position of the uprights.



Upper surface has suitable surfaces fitted between the main surface so as to increase or decrease the carrying surface of either side for transverse control. Lower surface has also slidable controls extending out so as to increase the wing spread of either side. Between the uprights are two roller arrangements similar to a roll curtain but made with wood or wire stiffening, and may be unrolled in either of the 3 grooves as shown in drawing. The front elevator is of the roller device also, the vertical rudder in the rear is a curtain of same material as rudder controls, but does not roll it up, but simply slides from one side of the V-grooved guides of the rudder to the other, and when half way between it would guide the aeroplane straight forward. The roller curtain could be made as an appliance so it could be removed at will and used on any type of machine.

V. G. GUSTAFSON.

Joliet, Ill.

Ascensions

SAN ANTONIO.—Feb. 28, Clifford B. Harmon, pilot, and George B. Harrison, in the "New York" to Rount Mt., 10 miles from Austin, Ark., on March 1. Dist. 550 miles; altitude, 12,000 ft. Descent was made because of an approaching storm.

ST. LOUIS, March 8.—The St. Louis ballooning season opened auspiciously to-day with two ascensions, six passengers being carried in the 40,000 and 80,000 cubic foot aerostats which started.

The balloon St. Louis No. 3, piloted by S. Louis Von Phul, with Miss Eva Tanguay and Horatio Bowman, Jr., of Alton, Ill., aboard, landed near Turkey Hill, Ill., twenty-seven miles from St. Louis, at 3 p. m., after three hours and five minutes aloft, the start being at 11.55 a. m.

The new 40,000 cubic foot balloon of H. E. Honeywell, with William F. Assman as pilot, and E. Percy Noel, acting secretary of the Aero Club, landed at Oakdale, Ill., forty-five miles from the starting point, at 4.15, three hours and fifty-five minutes after the getaway at 12.20 p. m.

The 80,000 cubic foot St. Louis No. 3 started with sixteen sacks of ballast; the half-size balloon got away with only six sacks. Mr. Assman, who piloted the new balloon, was on the third of his qualifying trips for a license, is for this reason thought to have made a remarkable showing. Honeywell stated afterwards that he believed the comparative novice would become one of the most successful of the local club's pilots. Mr. Assman's entrance into the balloon field is considered significant for the success of St. Louis in the national elimination race to select the team for the international event, because he will make a seventh club pilot available to contest.

The SENSATION

Of the Aerial Craft Exhibition
held at Boston, Mass., was the

8 Cylinder
60-70 H. P.

Aviation Motor

Exhibited by its Builders, the MACHINE DEPARTMENT

Easton Cordage Company

Easton, Pa.

¶ This motor of unsurpassed beauty of finish and design, together with a Voisin type aeroplane, also constructed by the same concern, occupied the center of interest and attraction throughout the whole period of the show's activities :: :: :: :: ::

The most Reliable, Powerful, and Practical Motor yet produced in America

TWO SIZES	8 cylinders	60-70 H. P.	weight 275 lbs.
	4 "	25-35 H. P.	" 130 "

¶ Our motors express the ultimate achievement in engine construction, a degree of perfection which leaves nothing to be added, or desired in the way of improvement. Our motors are practical motors, complete in every detail, and the construction so thorough and sincere that the reliability which aviators demand is guaranteed as far as is humanly possible :: :: :: :: :: :: :: :: ::

American Builders of the STANDARD VOISIN TYPE AEROPLANE

recognized to be the most stable, simplest to operate, and safest of all present aeroplanes in existence. :: :: :: :: :: :: :: :: :: :: ::

The only type machine not infringing the Wright's patents

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We Build Balloons That Win

HAVE WON EVERY CONTEST ENTERED AGAINST ALL MAKES

CHICAGO CONTEST — Balloon "Fielding-San Antonio" — 9 competitors
Distance and endurance trophies, also water record of the world—350 miles one trip
INDIANAPOLIS CONTEST — Balloon "University City" — 6 competitors
PEORIA CONTEST — Balloon "Peoria" — 3 competitors
ST. LOUIS CENTENNIAL CONTEST — Balloon "St. Louis III" first, and Balloon "Centennial" officially second for distance and endurance, 47 hrs., 41 min.—8 competitors
Balloon "St. Louis III"—speed record of America—Lambert, pilot; Von Phul, aide
JUST THINK OF IT, EVERY CONTEST IN THE LAST TWO YEARS.

Aero Club Grounds, Centennial Contest, St. Louis, Mo.

¶ The longest voyage by a licensed pilot in the United States, in 1908, was made with the 2200 cubic meter "Yankee"—461 miles with two stops—a remarkable performance; 800 pounds ballast aboard when landing.
HONEYWELL, Builder

¶ The greatest balloon trip of 1908 and 1909—850 miles in competition—made by the 2000 cubic meter balloon, "Fielding-San Antonio." Four American and two Foreign makes defeated by wide margin.
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34th ISS

AERONAUTICS

THE AMERICAN MAGAZINE OF AERIAL LOCOMOTION

VOL. 6
NO. 5.

MAY, 1910

25
CTS.

Facts About "Elbridge" Engines

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Only engines with unlimited guarantee based on actual performance!

Less bulk for the power than any other engines in the world!

Fewer parts (Working or otherwise) than any other engine in the world!

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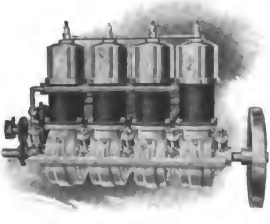

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Also made in 2 cyl. 20 h. p.; 3 cyl. 30 h. p.; 6 cyl. 60 h. p.
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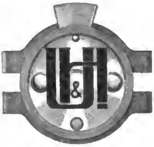
— on —

Aeroplanes



AUGUST EULER

the holder of the first German flying machine pilot license used during his first three trial flights on December 31st, 1909,

The Master Magneto!

He writes:—"I made my first three trial flights with your Magneto in use, and I herewith beg to speak of its high efficiency. All Euler flying machines are fitted with your Magneto, as they give the best results. I have tested all other makes and so certify."

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(INCORPORATED)
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P. O. Box 735 March 1, 1910

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Dear Sirs:—

The propellers your company are manufacturing fulfill every claim you make, in fact, the 6 ft. dia. 4 ft. pitch propeller delivered to us did even better work than you guaranteed.

We will need more very soon.

Respectfully,
L. A. W. MOTORS CO.
Per Oliver Light

P. S. The pull obtained was about 210 lbs. at 1,000 to 1,050 R. P. M.

We are more than making good.

Do you not think it would pay you to save time and money by purchasing a standard article from stock?

6 ft. -	$50.00
7 ft. -	60.00
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When ordering, state if a right- or a left-hand propeller is required. When standing in the breeze created by the propeller, a left-hand propeller turns in a direction opposite to the hands of a clock.

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ROY KNABENSHUE

WHEN we look up and see a man
  Careering in the blue
Astride a strange machine, we know
  It's Roy Knabenshue.
A bit of silk, some rusty wire,
  Two matches he can take,
And out of such materials
  An airship staunch can make.

The first to sail the Great White Way,
  Daredevil of the sky,
He's never happy, save aloft
  Exploring currents high;
And any day we may expect
  To see this wizard run
A line of airships to the moon
  And maybe to the sun.

For World's Most Famous Aeroplanes
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Aviators for Tournaments

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In stock and can be shipped immediately

All Sparling-McClintock Propellers are of laminated spruce and ash. We get 200 pounds thrust from our 6-foot propeller at between 1100 and 1200 revolutions per minute.

Our 6-foot Propeller, any pitch, wt., 7 lbs.,	$30.00
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PROPELLERS

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Catalog, Free on Request.

Aeronautics

Military Aeronautics

By Brigadier-General James Allen

Chief Signal Officer, U. S. A.

THE importance of holding international contests in America cannot be overestimated. The progress of aeronautics in this country must depend largely upon individual or corporate initiative. The government may be relied upon to do its part.

There is a strong feeling in aeronautical circles that it has thus far been too conservative. This may possibly be true, but the matter has not been altogether neglected. It has been considered by the executive and discussed in congress, and the secretary of war, in his report for this year, says:

> **But whatever may be the influence of aerial locomotion upon the art of war, whether or not it will ever prove a valuable auxiliary to armies in the field, the fact must be recognized that all first-class powers except the United States are providing themselves systematically with aerial fleets.**

UNITED STATES A LIBERAL PURCHASER.

The aeroplane problem is self-developing. Owing to the low cost of constructing the machines, smal companies and even individuals of moderate means can afford the cost of the experimental work. Of course, inventors and manufacturers must have customers for their creations, and they will no doubt find many private ones, and I am sure the government will, a little later on, be a liberal purchaser.

GREAT COST OF THE DIRIGIBLE.

With the dirigible balloon, however, conditions are somewhat different. Owing to the great cost not only of the balloon, but of the necessary garages and gas plants, it will almost necessitate government aid. However, in Germany and France, where the greatest progress has been made, personal initiative and money contributed by the people have been the controlling factors.

After the loss of the first Zeppelin, the German people in a few days gave $1,500,000 to Count Zeppelin to rebuild his ship, and very recently, after the disaster to "La République," the French people contributed liberally and quickly, and the manufacturers charged only the actual cost in constructing a new ship.

GERMANY'S AERIAL FLEET.

Methodically, as a whole, Germany has constructed an aerial fleet. She now possesses 10 military dirigibles of large tonnage, and 15 private dirigibles. But, what is more important, she is also prepared to construct them rapidly.

In addition to the Zeppelin balloon, the government has permitted to be constructed, by its engineer officers, dirigibles of the "Gross" system, and powerful means of operation have permitted Major Parseval to build airships of this type. Other inventors have realized more modestly but surely their ideas, and stock companies having as subscribers the large cities of Germany, have established a large capital for the exploitation of various systems.

During this time the German government has organized success by co-ordinating or affiliating the different efforts.

HYDROGEN CHEAPER THAN COAL GAS.

It has prepared as a public utility pure hydrogen gas, which up to that time was an unused by-product, from chemical factories. In addition to saving this hydrogen gas as a by-product, the German government has also established large factories for the manufacture of hydrogen gas by means of what is known as the "water gas" process. This is said to be manufactured in Germany at 50 cents per 1,000 cu. ft.

It has placed in depots in these factories thousands of bottles of hydrogen, painted in gray with the imperial arms.

In a single one of these storehouses, that of Grisheim, near Frankfort, there is in a storage depot not only 15,000 bottles always filled, but in addition two trains composed of vehicles loaded with bottles connected in series to a common stop-cock. Each train embraces a repair vehicle. These vehicles in case of need leave by the quickest routes and superior orders are given by which they can be attached even to the imperial train.

At another station—Bickendorff—large provisions of hydrogen (one depot alone contains up to 3,530,000 cu. ft. of gas have been formed. Upon the least alarm given of an unexpected landing, wagons loaded and carrying each over 100,000 cu. ft. of hydrogen, are ready to be attached to an express train to take them immediately as near as possible to the dirigible in distress.

This is not all. The government has constructed at the same time immense sheds and garages. Those at Cologne and at Metz each shelter six Parsevals of 6,700 cubic meters capacity (235,000 cu. ft).

THE NEW ZEPPELIN MONSTER.

The latest information from abroad states that the new Zeppelin will be 984 ft. long and will carry 360 people. It will contain eight motors, four for use and four for reserve. The first line of the Zeppelin Airship Co. to be opened is from Hamburg by way of Cologne to Baden Baden; the second from Hamburg to London. The first "Zeppelin" made its ascent in July, 1900, so that 10 years have been spent in attaining the present proficiency.

THE MILITARY MORAL.

The moral of all this is that every nation will have to serve a long and arduous apprenticeship in the new art, establish practical schools, build many experimental vessels, encourage amateur talent, enlist the aid of aeronauts and engineers, and spend considerable sums spread over a number of years. Success may then come quite rapidly, but it never can be had at a moment's notice by spending a large sum of money at the moment of emergency.

It is agreed by all military authorities that the only way of effectively opposing military airships is by means of airships. It is not considered possible to protect against airships by stationary guns from the earth. This new weapon of war is now a part of the military establishment of the principal world powers, which this country has at present no means of combating either at home or in case of operations abroad. It is entirely practicable to-day, with a single dirigible balloon or a few aeroplanes, to destroy by means of explosives, and particularly incendiary mixtures, the shipping of any of our large seacoast cities, as well as property of enormous value, against which this government has not yet provided means to protect itself.

It has never been the policy for the United States to maintain a large military force, but it has been the policy to furnish the American army with the latest and best types of war material as fast as they are developed—namely, the best guns, ammunition and equipment of all kinds—and there is no doubt but that it will continue this policy with reference to aeronautics and will provide the army and navy with an ample supply of the best aeronautical devices known or that can be devised and constructed.

Here lies an unlimited field for patriotic endeavor, for creative genius to devise, for young men to study and practice the art of navigation of the air, for men of wealth to aid the inventor and students of the art, for municipalities to provide aeronautical parks, and for corporations to start lines of airships, both dirigibles and aeroplanes, or some combination of these.

Some Devices for Lateral Stability and Control :: ::

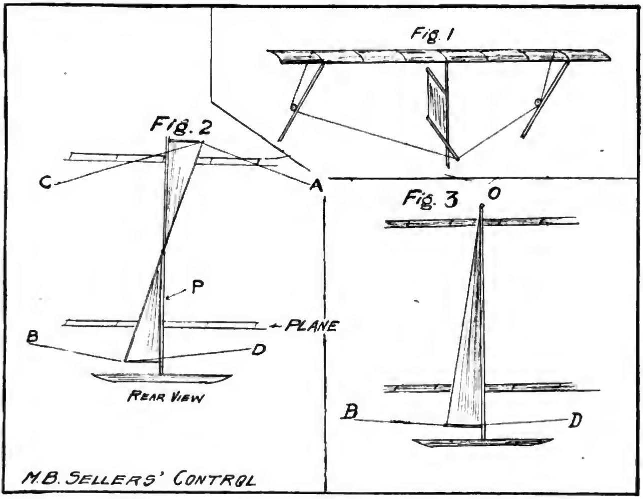
By M. B. Sellers

EDITOR'S NOTE:—Mr. Sellers has the distinction of flying with less power than any other experimenter. His motor gives but 5 h. h. p., yet he has made several hundred short flights with his four-deck machine.

DURING the last two years several kinds of lateral control have been tried on my machine, and a brief account of some of them may be of interest. These devices have been tested to some extent in short flights. There is a drawing of my glider in AERONAUTICS of October, 1909, page 130. A feature which contributes to lateral stability is the vertical keel, which is above and behind the planes; this, coupled with the low center of gravity, tends to keep and restore equilibrium. An objection to this vertical surface above the planes is that it tends to upset the machine when struck by a side gust; but on the whole it tends toward safety.

The front spars of my planes are rigid and form part of the framework; the rear spars are supported by props or other devices; and in this glider these supports are yielding, allowing the rear of a wing to tip up under abnormal pressure, thus helping to stabilize the aeroplane. While this arrangement did not work as well as expected, it did produce a decided improvement in stability.

Last spring I tried a device, first used on my kite in 1903, viz.: I connected the rear spar at one end of a plane, with the rear spar at the other end, by a cord running over pulleys, so that when a gust would tip up the right wing end, it would pull down the left one. On the kite a similar device caused it to weave about, and its use was discontinued; but on the aeroplane this tendency could be corrected by the rudder. It seemed, however, that the action was too erratic, so, to improve it, I connected the cord leading to the two ends of the wings to a hinged vertical plane, so that when a side gust would turn the vertical plane, it would depress the leeward wing and slacken the windward one, as shown in Fig. 1. In the few imperfect trials made, it seemed to work well; but it acts *exactly wrong* when making a turn, so that there should also be provision for positive control. At present I am testing a positive lateral control, which I believe is new; that is, by twisting a horizontal or vertical rear rudder. On my present machine I am applying it to a high (i. e., wide) vertical rudder. This rudder, shown in Fig. 2, is hinged or fastened to a post (p), and the cords (A, B, C, D) lead to the steering device. By pulling cords A and B and slacking C and D, the rudder is twisted as shown; while by pulling A and D, it is merely turned. These operations are produced by simple movements of the steering device. A modification, simpler but less effective, is to have the upper point (O, Fig. 3) fixed and steer or stabilize by turning the lower corner by the lines B and D.



M.B. SELLERS' CONTROL

Models

Y. M. C. A. Meets

ON Saturday, March 29, were continued the West Side Y. M. C. A. (New York) flights of model aeroplanes from the 22nd Regiment Armory. There were 22 machines entered, a number of which were new ones. In the men's class, W. M. Sage with a Curtiss biplane starting from the floor made 107 ft. 7 in. In the boy's class machines launched from the hand F. M. Watkins made 168 ft., D. Grier, 139 ft. and C. G. Vogel, 132 ft. 6 in.

The next Y. M. C. A. contest was held on April 2 in the 14th Regiment Armory, Brooklyn, under the auspices of the Prospect Park Branch.

There were 22 machines entered. In the boys' class, F. M. Watkins and D. Grier were tied with 139 ft. On the try-off Watkins made 168 ft., the longest flight for the day. C. G. Vogel came next, with 132 ft. 6 in.

In the men's class W. M. Sage with a Curtiss bi-plane starting from the floor, made 107 ft. 7 in.

The next contest will take place on the 16th.

LESH MODEL FLIES CROSS CHANNEL.

The "Channel" was represented by the space between the balconies of the Metropolitan Opera House, New York. It was on one of the evenings of the French Fair, April 8th. This won a silver cup offered by Henri Chapal. Walter Phipps was second, winning a copy of Lougheed's book. The "Rheims" contest, in which a number entered models, was held in a side room. Lesh was again a winner, for which he got a year's subscription to AERONAUTICS.

P. S. 77 CONTESTS.

Aeroplane contests added an attractive feature to the annual games of Public School 77, held April 9 at the Eighth Regiment Armory, 94th Street and Park Avenue, New York. There were a number of competitors from the Junior Aero Club, as well as from the school, who participated in this part of the program, and several of the flights were decidedly creditable. The longest flight in the open class was made by F. M. Watkins. With a monoplane of original design he cleared 145 ft. last night in one of his flights, and another was measured at 86 ft. The long flight would have accomplished a greater distance had it not been interfered with near the side of the armory. The next best flight was made by H. Southworth's monoplane, the distance being 139 ft. He won a silver medal. P. W. Pierce, with a Langley model machine, recorded 124 ft. and got the bronze medal.

A Launcher for Gliders

By Octave Chanute

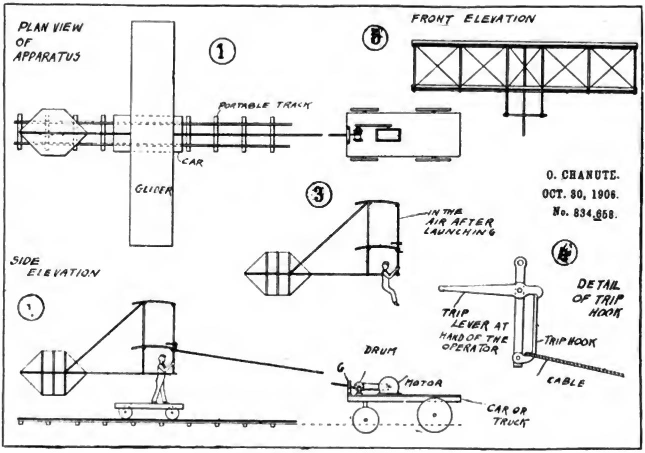
MANY requests have been received for advice on the construction of a launching device for gliders. Towers with falling weights have been used, inclined railways, mounds, portable wooden mounds, etc. Perhaps the most satisfactory and at the same time the cheapest method is that exhibited by Mr. Chanute at the St. Louis Exposition, 1904. A patent was taken out on this to keep it out of the hands of irresponsible persons. Mr. Chanute is willing to grant licenses gratis to parties giving assurance of cautious experimenting.

Mr. Chanute describes the method of operation as follows:

"In practicing my invention the track, preferably portable, is generally laid in the direction of the existing wind and the car, preferably a light platform-car, is placed on the track. The truck carrying the winding-drum and its motor is placed to windward a suitable distance—say from two hundred to one thousand feet—and is firmly blocked or anchored in line with the portable track, which is preferably eighty or one hundred feet in length. The flying or gliding machine to be launched with its operator is placed on the platform-car at the leeward end of the portable track. The line, which is preferably a flexible combination wire-and-cord cable, is stretched between the winding-drum on the track and detachably secured to the flying or gliding machine, preferably by means of a trip-hoop, or else held in the hand of the operator, so that the operator may readily detach the same from the flying-machine when the desired height is attained.

"Then upon a signal given by the flying or gliding machine operator the engineer at the motor puts it into operation, gradually increasing the speed until the line is wound upon the drum at a maximum speed of, say, thirty miles an hour. The operator of the flying-machine, whether he stands upright and carries it on his shoulders, or whether he sits or lies down prone upon it, adjusts the aeroplane or carrying surfaces so that the wind shall strike them on the top and press downward instead of upward until the platform-car under action of the winding-drum and line attains the required speed.

"When the operator judges that his speed is sufficient, and this depends upon the velocity of the wind as well as that of the car moving against the wind, he quickly causes the front of the flying-machine to tip upward, so that the relative wind striking on the under side of the planes or carrying surfaces shall lift the flying machine into the air. It then ascends like a kite to such height as may



The Chanute Launcher

be desired by the operator, who then trips the hook and releases the line from the machine. The operator being now free in the air has a certain initial velocity imparted by the winding-drum and line and also a potential energy corresponding to his height above the ground. If the flying or gliding machine is provided with a motor, he can utilize that in his further flight, and if it is a simple gliding machine without motor he can make a descending flight through the air to such distance as corresponds to the velocity acquired and the height gained, steering meanwhile by the devices provided for that purpose.

"The simplest operation or maneuver is to continue the flight straight ahead against the wind; but it is possible to vary this course to the right or left, or even to return in downward flight with the wind to the vicinity of the starting-point. Upon nearing the ground the operator tips upward his carrying-surfaces and stops his headway upon the cushion of increased air resistance so caused. The operator is in no way permanently fastened to his machine, and the machine and the operator simply rest upon the light platform-car, so that the operator is free to rise with the machine from the car whenever the required initial velocity is attained.

"The motor may be of any suitable kind or construction, but is preferably an electric or gasolene motor. The winding-drum is furnished with any suitable or customary reversing-guide to cause the line to wind smoothly and evenly upon the drum. The line is preferably a cable composed of flexible wire and having a cotton or other cord core to increase its flexibility. The line extends from the drum to the flying or gliding machine. Its free end may, if desired, be grasped and held by the operator until the flying-machine ascends to the desired height, when by simply letting go of the line the operator may continue his flight free. The line, however, is preferably connected to the flying or gliding machine directly by a trip-hook having a handle or trip lever within reach of the operator, so that when he ascends to the required height he may readily detach the line from the flying or gliding machine."

The Greene :: Biplane ::

THE Greene biplane shows good workmanship throughout. It will no doubt find a good sale among those who are not anxious to enter into litigation, for there are no warping of surfaces nor use of wing tips. The design is original, and does not resemble any other machine on the market. Following are some details. Dimensions are given in sketch.

Main Planes.—The main cell divides into five sections by simply unfastening wires and the triple nickel-plated strut sockets. At each lateral extremity there is a vertical surface, as in the Voisin machine, with two others at the next inner struts respectively. Each lateral beam is in pieces, the longest of which are 6 ft. All the struts are laminated spruce, as are also all ribs. The struts are very small fish-shaped, measuring ¾ in. by 1⅝ in. There are four layers of wood, stained mahogany and varnished. The ribs have each 3 laminæ, except those which come at the five sectional divisions, which are somewhat heavier. Naiad silk is used underneath the ribs. At the section points the cloth is laced to the big ribs.

Other Surfaces.—The tail has two rigid vertical surfaces. Between these is a fixed horizontal surface. On top of this is a movable vertical rudder. In front of the main cell is the horizontal rudder 9 ft. spread by 28 in. fore and aft. This is actually higher than the top plane.

Power Plant.—A rebuilt Curtiss 8-cylinder air-cooled engine, rated at 40 h. p., and similar to that used in the June Bug, drives direct a 6 ft. Greene two-bladed propeller. Instead of eight carburetors, manifolds have been attached to the motor so that but two carburetors were used. The weight without any accessories, except timer, showed on the scales 165 lbs. The propeller gave 230 lbs. push at 1.260 r. p. m. Ignition is by battery and coil. The upper and lower surfaces are cut away at the rear to make room for the revolution of the propeller.

Mounting.—The whole machine rests on two 20-inch wire wheels in combination with two skids, fitted with spring shock absorbers.

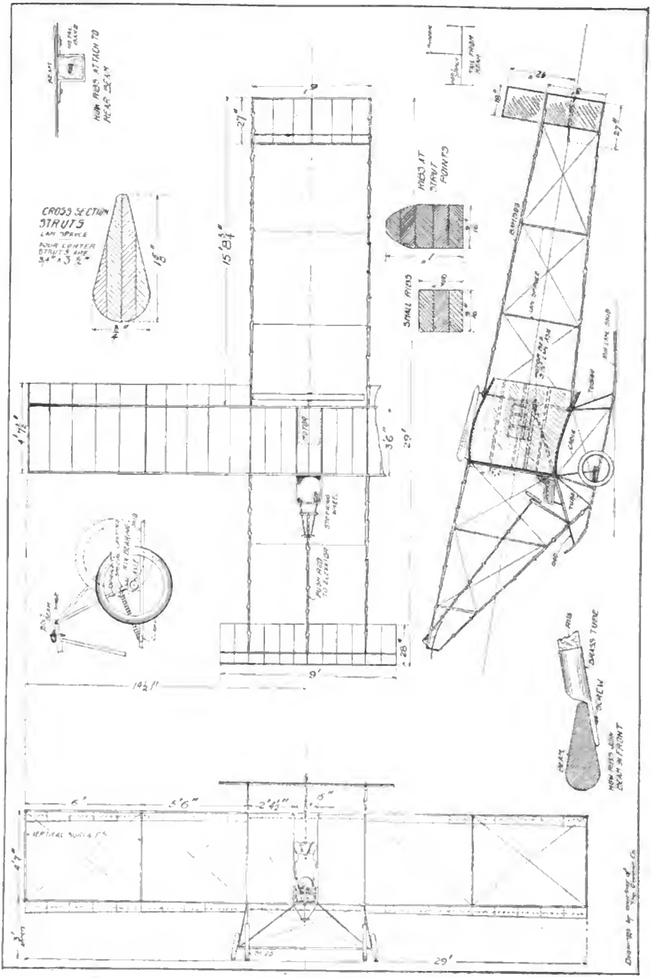
Controls.—The front rudder is operated by pushing forward or pulling back on a rod; the rear vertical by turning the steering wheel in the generally accepted way. On the wheel is the gas throttle and spark cut-out.

Stability.—This is inherent in the surfacing, it is claimed, the "side curtains" adding thereto and preventing too much skidding.

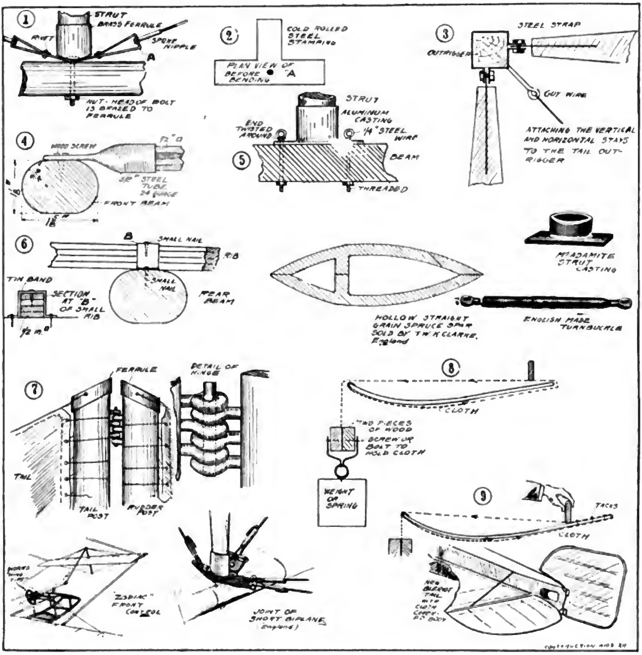
The weight without motor or aviator is about 110 lbs. The machine stands at a very steep angle. As soon as the propeller is started it raises the tail and sets the machine at its flying angle. As soon as speed is attained the machine raises without tilting the front control. In landing, the rear of the skids acts as a brake and stops the machine almost within its own length. The whole apparatus packs into two comparatively small boxes.

On completing the construction of the machine Dr. Greene calculated the theoretical center of gravity, and had the aeroplane placed on a fulcrum at points which he had marked on the skids. It promptly rose to an even keel and balanced almost to certainty.

No wires are used in the machine. Specially woven fine steel cable takes its place.



The Greene Biplane



Construction Aids
XII.

FIGURES 1 and 2 illustrate an improvement in the usual method, introduced in the Greene machine. By bending the stamping in Fig. 2 to the shape in Fig. 1 and riveting, two thicknesses of the metal are done away with between the beam and the strut socket.

An arrangement for attaching a box tail to outriggers is shown in Fig. 3. Fig. 5 shows the threaded steel wire used in the Farman machine.

Figs. 4 and 6 illustrate the method adopted by Curtiss in fastening his ribs to the lateral beams. The vertical rudder of the Antoinette model is hinged to the tail piece as shown in Fig. 7. Drawings 8 and 9 show how to put on a double layer of cloth. The cloth should be dampened first to keep it from stretching later on if wet while on the machine.

The Bleriot machine brought over by Saulnier has been returned to France. The Wrights started a suit when the machine arrived, no exhibitions were given and Saulnier got into financial difficulties and was assisted by L. Lewkowicz.

J. W. Curzon, who imported a Farman machine, has been making trials at the Motor Speedway at Indianapolis. He has made several flights of about five-eighths of a mile, but has not yet been able to turn very well. In the past he has been having engine trouble.

The Aviation :: :: World :: ::

Flights by Greene Aeroplane.

Mineola, L. I., April 1.—R. W. Crosby, of San Francisco, made his first flights to-day in the Greene aeroplane he purchased on coming east a short while ago.

After a long delay in getting a motor fitted Dr. Wm. Greene gave his new type biplane its first try-out. The first flight was from Mineola to the Motor Parkway, about 1½ miles. Then Dr. Greene announced he would demonstrate the machine in accordance with the contract. From the Parkway a circular flight of about 2 miles was made, proving the stability of the machine without the use of wing tips or warping. The wind was about 7 to 8 miles an hour. After accepting delivery Crosby got in it himself for the first time and flew it back to the start, a distance of 1½ miles, shutting the motor off when he was 30 ft. in the air. He made the remark, "I didn't know when it struck the ground, it glided so gently to the ground." Eleven other flights were made by him, of varying lengths.

The breeze did not seem to bother the machine, which flew on a remarkably even keel, and there seemed to be no trouble in turning.

The aeroplane was immediately disassembled and shipment made to San Francisco, where further flights will be made.

Four more aeroplanes are in course of construction by the Greene company. One is nearly ready. These are all duplicates of the one sold to R. W. Crosby. Two Greene machines are now flying in this country. A factory, 50 by 100, is to be contracted for at Mineola. One point is of particular interest, and that is that the Greene machine does not infringe the Wright patent.

Pfitzner Monoplane Flying Again.

On April 5th, while making his 14th flight of the day on the grounds of the Country Club at Buffalo, N. Y., A. L. Pfitzner met with a mishap. In making a quick change in his course a gust of wind unstabilized the machine and it landed on the front control and right wing. Mr. Pfitzner was not any worse than severely bruised.

The machine had been taken from Hammondsport, where it was built, to the Sportsmen's Show at Buffalo and afterward to the Country Club. On April 2 three flights were made but a slight accident was had on the last. On the 5th 13 flights were made almost as fast as the machine could be flown up and down the field. In one particularly, was the sliding panels shown to be efficient. As he was about to alight, with lessened speed and headway, a gust of wind struck him from the left, twisting the machine quickly to the right and tipping the right wing down until it nearly touched. Pfitzner instantly speeded up the motor, raised the elevator, turned his rudder to the left and shot out the right panel and the machine was again on an even keel.

AEROPLANE FROZEN IN THE ICE.

For the first time an aeroplane has been frozen in the ice. During the trial flights on Lake Keuka, one afternoon, the ice had softened under the sun's rays and on starting up, the aeroplane broke through the ice. Of course, the wings remained above. Mr. Pfitzner and his men broke through the ice several times and they had to hang on to the wings. The next morning the ice was solid again and the machine was cut out with an axe.

Moore Making More Monoplanes.

As can be seen from the photograph, this machine, built by R. S. Moore, 1438 Columbia Rd., Washington, D. C., is of the Bleriot type, with the difference that in the Moore machine the operator is seated below the main planes, while Bleriot sits above them.

The dimensions are: 26 ft. from tip to tip, wings being 12 ft. long with 2 ft. space of frame, 6 ft. 3 in. chord, length of frame 22 ft., rear elevating plane 3 by 8 ft. and rudder is 3 by 3 ft. The length is 24 ft. The motive power at present used is a five-cylinder 36 h. p. Adams-Farwell revolving motor, which is connected to the propeller with the usual countershaft. The total weight without man is 260 lbs.

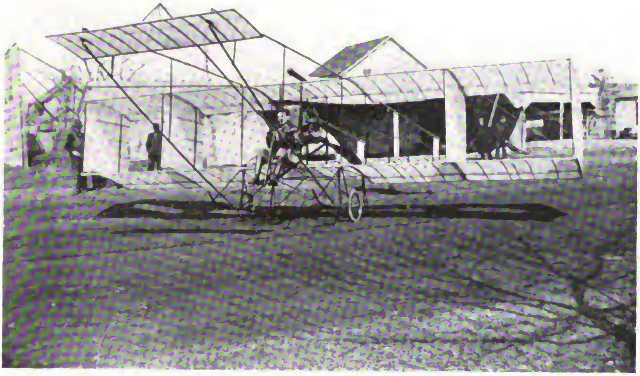
Experimental flights are now being made at Ft. Myer. Through the kindness of Mr. Moore we will be able to give complete details of the new machine in the near future.

The new machine now building will be equipped with a five-cylinder Berliner revolving motor of 35-40 h. p., which has been tested for 1½ hours with load. This monoplane will have many new features.

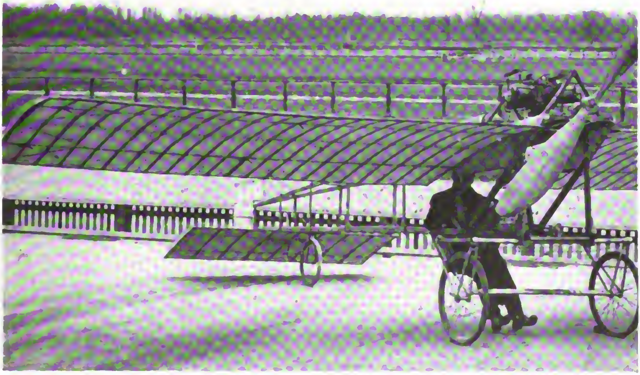
Paulhan Back Home.

Aviator Paulhan, the former mechanic, now world's record holder in aviation, has returned to that dear France with no very kind feelings toward America, and the Wrights in particular.

He made one good flight, on March 13, at the Jamaica track on Long Island before leaving. In the puffy, strong wind it was sensational, though it lasted but eight minutes. Paulhan had considerable trouble with his backer, Edwin Cleary, and in the end the machines were placed under the control of the courts and are still in this country. Mr. Cleary may possibly bring over other machines which do not infringe and try to recoup his enormous losses sustained during the American tour of his aviatorial prima donna.



The Greene Biplane



R. S. Moore's Monoplane

First German Aeroplane Pilot.

August Euler, through his trial flights of December 31, 1909 (three flights of 7 km. in two complete circles) gained the distinction of being the first German aviator to receive an aviation pilot license from the German Airship Society.

His machine is the first machine of German make of this particular type. This machine has 50 sq. meters surface in the planes, including the tail and elevator.

The total weight of this machine is 238 kgs. There are three steering planes in the tail and at each rear edge of the lower surface is a triangular "wing tip" for stability. The motor is a rotary 8-cylinder 55 h. p., fitted with a U. H. Master Magneto. The propeller of this apparatus is 2.60 m. diam. The spread of planes 10 m. The total height is 9 m.

Canadian Monoplane Flies.

The monoplane completed by the Canadian Aerodrome Co. for Gardiner G. Hubbard of Boston has had its first successful trials.

After waiting some days for propitious weather, on the morning of April 5 nine beautiful flights were made over the ice of Bras d'Or lake, in Nova Scotia, near Dr. A. Graham Bell's estate. These lasted from 10 to 15 seconds each, elevation about 10 ft. It worked splendidly and was handled so well by Mr. Hubbard in these, his maiden flights, that no damage to the machine resulted either in landing or rising.

DESCRIPTION OF MACHINE.

In this machine are embodied features found in both the Bleriot and Antoinette types. Cleanness of lines has been the goal; and to arrive at this end the engine has been placed completely inside the body and the propeller shaft driven by chain and sprocket in the ratio of 3 to 5. The power plant is identically the same as that used in the Baddeck II, viz., a Kirkham 6-cylinder motor, water cooled, developing 40 h. p. at 1,400 and 48 at 2,000 r. p. m. The weight of this motor is 320 pounds. The only difference so far as the propeller is concerned lies in the fact that the monoplane propeller pulls, while the Baddeck II pushes.

The dimensions are as follows: Spread, 34 ft., and length, 30 ft. 2 in. This gives a total supporting surface of 200 sq. ft. and the weight of the machine without aviator, but including the engine, about 1,000 pounds. This gives a flying weight ratio of 3.8 pounds per square foot of surface.

The ice is now completely gone and the winter's program is over. Three out of the five machines built by Messrs. McCurdy and F. W. Baldwin have flown.

Joseph Seymour, crack automobile driver, has purchased the Curtiss aeroplane from A. P. Warner for exhibition purposes.

Wright Training School Starts.

A Wright aeroplane arrived at the Wright Co.'s training camp, just out of Montgomery, Ala., on March 19. With it were three men, Charles E. Taylor, J. W. Davis and W. R. Brookins. Three flights were made on March 28. The engine continually gave trouble. On the final flight, after 15 minutes in the air, the piston broke at an altitude of about 100 ft. and a successful landing made. Brookins was the pupil. Orville Wright is instructor.

The public has been given permission to view the flights, provided it does not encroach upon the field to get in the way of possible forced quick descents.

J. D. W. Lambert, brother of A. B. Lambert, president of the Aero Club of St. Louis, is to purchase a Wright aeroplane, to be delivered in the fall. Lambert expects to commence his training at the Wright aviation school, near Montgomery, Ala., in April or May.

Flight in Evansville.

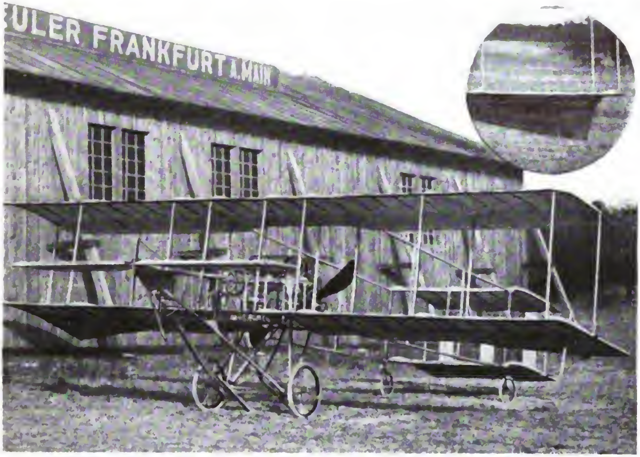
L. C. Wolfe, of Evansville, Ind., an official of the L. & N. R. R., got in a Curtiss type aeroplane built by Geo. B. Haddock, of Cincinnati, and owned by a circus, and at once left the ground and made a good flight of about half a minute, but grazed a fence in landing. Haddock had been having engine trouble and had just finished installing an automobile motor.

Army Aeroplane Flying.

The damage to the Signal Corps Wright aeroplane, due to rough handling on March 2, was easily repaired and flights as follows were made: March 12, five flights, 8½, 15, 4, 12 and 16 mins.; March 17, three, 6, 5½ and 7 mins.; March 21, one of 13 mins. Strong winds of from 18 to 45 miles an hour prevented flights on other days. The number of windy days was 22, the good days 9, during March. In all, 14 flights were made during the month, with a total of 179 minutes and 22 seconds in the air.

The Beach Bleriot-type Monoplane.

One of our illustrations on page 172 shows the Bleriot-type monoplane of Stanley Y. Beach, equipped with its new wings. These have a much greater curvature than the wings formerly used, and they are wider and longer than the wings Bleriot uses on this No. 11 monoplane. They have a supporting surface of 224 sq. ft. and are loaded to slightly more than 3 lbs per sq. ft. Mr. Beach, now that he has transferred his machines to his home at Stratford, Ct. (where he is continuing his experiments), has incorporated a new company in Connecticut, known as The Scientific Aeroplane Co. He is experimenting with a new device for automatic stability, of which we will have more to say in our next issue.



Euler Double-Decker

Many Machines Building at St. Louis.

H. A. Robinson has ordered an Elbridge 40 h. p. motor, which is due in St. Louis April 14. He has not materially altered his monoplane, which failed to fly last fall on account of lack of sufficient power, and will be ready to try it again with the new motor, about April 20.

W. F. Zeller has a monoplane completed and is waiting for his motor to be finished. He expects it in less than two weeks, and will be ready April 20 "for his trip," as he expressed it. Zeller believes that he will be able to fly to New York before summer is over.

William Frank has completed a monoplane and has nearly finished the 40 h. p. motor which will be installed. He will have the craft ready for the air April 15.

Clarence Williams will have his monoplane ready for trials April 30. Mark Fisher set May 1 as the date when he would have his curved plane apparatus ready for the air. Thomas W. Benoist will have his third biplane ready for trials in May. His second biplane is completed, but he is not satisfied with it.

Frederick Van Blarcom has ordered a more powerful motor built to his specifications which he will install in the monoplane which he was unable to drive successfully in the trials last week. He stated that the motor has been promised him within two weeks, but sets April 21 as the date when he will be ready to go out with his plane.

Will Y. Haggart has a monoplane nearly completed in sections, and is in search of a place large enough for an assembly room. He could be ready in two or three weeks. Alfred Kuhne has a monoplane completed, which is his third endeavor to build a successful machine. He needs a motor.

W. Fears, 4125 Green Lea place, stated that he had successfully built what he calls a "four-in-one" motor of 25 h. p., weighing 70 pounds. He offered the use of the motor to any member of the association for a trial about May 1, provided the experimenter guarantees him against loss or destruction of the motor.

E. Percy Noel, well known as a writer and lecturer on aeronautics, who is secretary of the Aero Club of St. Louis and aero editor of the *St. Louis Globe-Democrat*, was the first person out of the 750,000 who live in St. Louis to ride in an aeroplane. Noel went to Memphis to see the flying and stayed to ride with Curtiss on April 8.

Charles J. Strobel of Toledo, the airship magnate, has bought a Bleriot machine and is making a couple of copies of his Curtiss for exhibition work.

At the Montreal automobile show there were two aeroplanes exhibited. The Bleriot and Antoinette type machines of S. Y. Beach were rented to Manager E. M. Wilcox for the week.

Curtiss Flies at Memphis.

BY E. F. STEPHENSON.

MEMPHIS, Tenn., April 10.—For five days G. H. Curtiss, C. F. Willard and "Bud" Mars, who has graduated from ballooning to the aviation class and is flying a Curtiss machine, have given Memphis an all-star show. On the 6th the wind blew a gale, and Curtiss and Willard made each several short jumps.

On the second day Curtiss circled the race track on several occasions and made passenger flights, taking up "Bud" Mars on one and Mrs. Curtiss on the other, the first for Mrs. Curtiss. Once, in coming down, he had to steer the machine into a fence, but didn't smash anything.

Willard made some nice short flights, and did some spectacular gliding.

NEW WORLD RECORD.

The crowd looked for sensations every minute, but the conditions of the grounds rendered such flying dangerous, if not impossible. Later in the day Curtiss got off ground in 5 4/5 seconds, making a new world record, using the 8-cylinder machine. In the last flight of the day Curtiss arose in front of the grand stand and Willard from the field. Neither knowing the other was ready to fly, they met just north of the stand, Curtiss passing under Willard, amid the plaudits of the crowd.

The third day Curtiss made two-passenger flights, carrying George B. Walthen and E. Percy Noel of St. Louis. Curtiss later tried to beat the record made the day before, but only tied it. His distance was 143 ft. 11 in. Willard made several flights. Mars made several splendid flights, winning his way to the hearts of the crowd. This young fellow is destined to become a good aviator.

On the fourth day Mars made the most sensational flight of the meeting. Leaving the ground in front of the sheds and making a complete circuit of the course at an altitude of about 100 ft., alighting amid great applause. Willard followed in a few minutes, but at the upper end of the course, in making the turn, his machine skidded, and, finding he was unable to control same, he tried to alight. In so doing, he smashed into a fence, completely demolishing his front control and badly damaging the front spars on both planes. He suffered a severe cut in the ankle and a bruised shoulder. He made no more flights during the day, but stated he would be out next day if his machine could be repaired in time. Curtiss in alighting in front of the stand came very near having a similar accident. He was able, however, to check his machine by jumping out, so that only the front elevator was damaged. This was repaired in a few minutes. Mars was the feature of the day in his 4-cylinder 25 h. p. machine. He succeeded in tying Curtiss' new world's record for quick start—5 4/5 seconds. His distance was 171 ft. Curtiss then tried to lower this record, but couldn't even tie the same, his time being 6 seconds. Curtiss and Mars circled the course twice, both in air at the same time. Mars just simply had the crowd wild. They applauded every little thing he did.

MARS LANDS ON AUTOMOBILE.

On the 10th there was wind and a light rain. Curtiss and Mars made only short flights. In the last one Mars was flying along the track when a gust of wind from between the buildings hit the machine, which swerved and descended at an acute angle. One wing crashed down on the leather top of an automobile in which were some women, and the machine was badly damaged. Mars suffered some severe bruises. Earlier in the day Curtiss had to jump out of his machine and was dragged 30 ft. to avoid crashing into a fence.

Mr. Clarence Phillips, a friend of your correspondent, made a flight with Curtiss the last event of the evening. There is talk of extending the meet two days—10th and 11th. The attendance has averaged something over 8,000. All distances were measured by your correspondent, who acted with the judges in all events. The time was taken by Mr. P. White, who is official timer of the New Memphis Jockey Club.

CURTISS AVIATORS TOURING WEST.

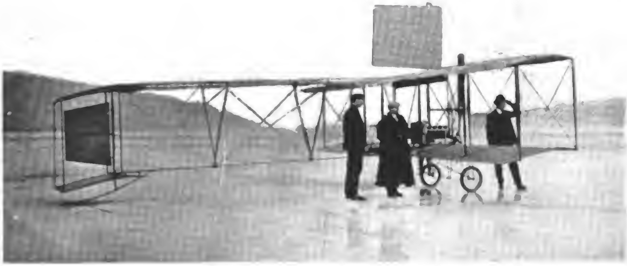
Frank H. Johnson, California Curtiss agent, made some 20 odd short flights at Monterey, Cal., March 19-20. On the 26th he made several short ones at Salinas, Cal. He narrowly escaped injury when he was caught by a gust of wind and overturned at Oakland, Cal., on April 2.

At Alameda, Cal., on April 5, while making a flight, Johnson landed in the mud and water off Alameda Beach.

His shoulders and hand were wrenched by the fall and he sustained a cut on his temple. The machine was damaged. A boy who gave an exhibition of gliding was also injured. A balloon ascent was another feature of the show.

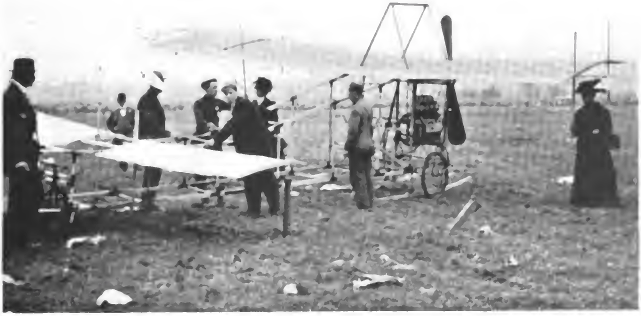
Charles K. Hamilton made three good flights of from 7 to 11 minutes at Tacoma, Wash., on March 20.

The Portland Aeronautical Club, of which E. H. Wemme, agent for Curtiss aeroplanes is president, has stirred up great enthusiasm in that city. Since Hamilton's flights the first part of March, the town has become virtually alive with all kinds of aero inventions and so-called improvements in aeroplanes. Two aeroplanes are nearly completed, and many models. Seventy thousand people saw the flights, the majority of whom saw them from beyond the gates, and the club lost a little over $2,000. If there had been any profits, it was planned to give them to some charitable institution or put them to the betterment of roads. Truly, this object is one which may well be followed in the future.

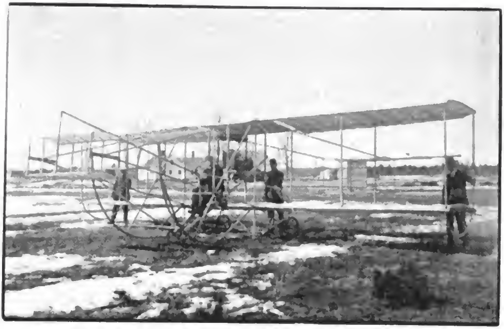


Captain Baldwin's Biplane

Photo by R. O. Rubel, Jr.



Eton-Twining Monoplane



Full View of the Ouellette Machine *Photo by Gerry*

The Ouellette Machine.

A. E. Ouellette, of Sanford, Me., has completed his Curtiss type machine.

DESCRIPTION OF AEROPLANE.

Each plane is 33 ft. spread, 5½ ft. front to rear, spaced 5½ ft. apart. The finest grade of unbleached cambric treated with a special rubber varnish is used throughout. The ribs of the main plane are of white ash ⅝ in. square and spaced 15 in. apart; these have a parabolic curve of 1 in. in 20, the greatest depth being about 18 in. back from the front edge The upright struts are spruce, elliptical in cross section. Each lateral beam is in three sections, held together with a metal sleeve. The front horizontal control, pivoted 12 ft. from front edge of the main plane is double, the curvature being in the same ratio as that of main planes, and measures 6 ft. spread by 2 ft. in length, surfaces spaced 2 feet apart This control is balanced off center and is operated by a push rod which is pivoted to the steering wheel, pushing out steers down, and vice versa.

A double horizontal plane spaced 3 ft. apart measuring 6 ft spread by 3 ft. long is placed 11 ft back of main plane. Between these surfaces is placed the vertical rudder which is 2½ ft. by 3 ft.; this is connected to the steering wheel by flexible cable wires.

The lateral balance is by wing tips 6 ft. wide and 2½ ft. long. These are placed half way between the main planes and hinged at the front edge to the two outermost front struts, at both ends of the plane. Cables run from these tips along the upper and lower main surfaces to the back of the aviator's seat. This back is so arranged that it acts as a rest for the aviator and at the same time every movement to the left or right operates the wing tops. If the machine tips to the left the aviator leans to the opposite side, which is a very natural movement. All planes are braced together by piano wire and make a very rigid structure. The planes are set on a 3-wheel chassis and skids. The wheels are 20 in. in diameter and are specially built and equipped with aeronautic tires. The front wheel springing up under the machine automatically when it leaves the ground, leaves it land on the two skids, which are spread 6½ ft. apart.

A. E. Ouellette in His Biplane *Photo by Gerry*

The power plant is a 30 h. p. water-cooled motor, which weighs only 125 lbs. and ignition by Eisemann magnets. This motor turns a 6½ ft. diameter, 5 ft. pitch propeller, at 1,200 to 1,400 r. p. m., producing a thrust of 225 lbs. to 240 lbs. The propeller is of laminated spruce and mahogany and formed to a true screw.

The motor is cooled by water which is forced to an El Arco radiator by an aluminum pump. The spark advances and throttle levers are placed near the steering wheel. An oil gun is also placed on the left of the aviator, this is to be used in case of emergency.

The whole machine weighs about 600 lbs. without the aviator and has a total supporting surface of 400 sq. ft.

The 25 h. p. Curtiss aeroplane has been able to carry a passenger. R. O. Rubel, Jr., of Louisville, Ky., was the first to be carried on this powered machine, making three flights of about a mile each over Keuka Lake.

Rockford (Ill.) Has Aeroplane.

E. K. Barnes and H. H. Havens, both of Rockford, Ill., have completed a biplane which closely resembles the Curtiss. The front rudder is a single horizontal plane, with horizontal tail the same. It has a single surface rear rudder. The auxiliary planes are attached to the two outer rear struts. The rudder is controlled with a strut handle in place of a wheel. Steering up or down is by pushing in or out on this bar which is attached to a pivoted upright.

The main planes spread 29 ft. 4½ in. and 4 ft. 6 in. front to rear, placed the same distance apart. The greatest depth of the curve is 3½ in., 1 ft. back from the leading edge. The propeller is 6 ft. laminated spruce. A Buick motor will be used in its trial. Ignition by Simms special aero magneto, and a Smith automatic starter, the latter a Rockford product.

News on the :: :: Coast :: ::

By Cleve T. Shaffer

MESSRS. Eton and Twining have completed a monoplane measuring 25 by 25 ft., the surface, including tips, double covered, contains 220 sq. ft. The wings are set at a slight dihedral angle. Later equilibrium will be obtained by planes at the sides of the main surface, sliding on steel tubes, being extensions of the main cross beams, operated by hand wheel. Fore and aft control is by a sliding rear horizontal rudder of 40 sq. ft. surface, operated by pushing the hand wheel backward or forward. Lateral control is by a double rear vertical rudder of 10 sq. ft., operated by foot control. The machine is mounted on a combination of skids and wheels.

Power plant consists of a 40 h. p. Mercedes engine weighing 240 lbs., driving a propeller 6 ft. diameter, 6 ft. pitch.

Ernest Ohrt, a young member of the San Francisco Aero Club, now holds the club record for height, towed flight and gliding. The club has its aerodrome located on the sand dunes near the ocean.

The Pacific Aero Club has formulated plans for their aircraft exhibition, scheduled for the first part of May. Entries are desired from manufacturers of all kinds of aero supplies. For information address C. T. Shaffer, 302 Holyoke Street, San Francisco.

At a recent meeting of the club held in the Palace Hotel, an interesting lecture was given by Lieut. Paul Beck, of the U. S. Signal Corps, on the Relation of Aeronautics to National Defence. Cleve T. Shaffer, the retiring secretary, gave a short talk on the Relation of Aeronautical Progress to the Future Life of Mankind.

The Hudson-O'Brien monoplane met with misfortune, one of the cylinder heads blowing out. The machine has been materially lightened, and the position of the motor changed. Several other machines around the bay are very near completion.

Fung Joe Guey, the young Chinaman of Oakland, who was reported to have flown with a 6 h. p. motor some time ago, has now purchased a 60-75 h. p. motor of local manufacture and an 8-foot specially designed Coffin propeller. All details are being kept a close secret. It is said that the Chinese government is backing him financially.

L. L. Hill, of San Jose, Calif., has constructed a hot-air dirigible. The air is heated by a generator which throws a stream of fire ten feet into the interior of the bag. A 10 h. p. motor is used for propulsion. It is said to have made a successful flight recently at San Jose, but at a public exhibition at Stockton the machine proved a failure, the wind blowing the bag about and forcing out the hot air.

Fred P. Rugg, of Fruitvale, Cal., has a Bleriot-type monoplane almost ready for trial.

Frank H. Johnson, agent for Curtiss machines in California, has been giving exhibitions at various places. His tour has covered Marysville, Feb. 12-13; Chico, Feb. 19-20; Stockton, March 5-6; Woodland, March 13; Del Monte, March 19-25; Salinas, March 26-27; Alameda, April 2-3; San Jose, Rose Carnival, in May.

The Yale Aero Club is a new collegiate club which is building a glider. The officers are: R. J. Carpenter, president; Max Von Hoegen, secretary; Reuben Jeffrey, treasurer.

The Aero Club of Michigan has ordered a 40,000 cu. ft. balloon to be delivered May 15 from A. Leo Stevens. The Jackson (Mich.) Chamber of Commerce is laying a gas main and erecting a balloon shed for the club.

Coming Events in Flying

The Indianapolis Meet.

Arrangements have been made by the Motor Speedway managers, Indianapolis, Ind., with the Aeroplane Exhibition Co., for the "First National Aviation Meet" to be held June 13-18. The Wright brothers have given their consent to have this an open meeting and entries are desired from all who have machines that fly.

The following events are promised as a part of the program:

For the machine starting with the shortest running distance.

For the start from the shortest distance, regardless of method for rising in the air.

For the machine making a complete circuit of the Speedway track nearest to the ground.

For the machine making the fastest lap of the Speedway regardless of height.

For the machine making the fastest ten miles.

For the machine landing nearest to a given spot. Machine must land within a given area to receive a prize.

For the machine making the slowest lap of the course in the air.

For the machine remaining in flight for the longest time (duration prize).

Special match races between various contestants.

Special open events between the various aeroplanes.

Handicap events around complete circuits of the course at various distances.

Carrying various numbers of passengers at fast and slow speeds, near the ground and at high altitudes.

Saturday, June 18, last day of Aviation Meet—Special trials for record high flights. Also cross-country flights over the state of Indiana.

In all these events there will be special cash prizes, trophies and medals, with additional bonuses for lowering existing world's records.

The entrance fee shall be $100 for each machine entered in these contests. One entrance fee pays for entry in all events.

There will without doubt, be additional events for dirigible craft, but these become of slight minor importance compared to the aviation part of it. Special efforts are being made to have both Orville and Wilbur Wright fly at this meet in exhibition flights.

It is said the cost of this meet will be $95,000. The managers are guaranteeing the Wright brothers $50,000 cash: money prizes to the amount of $25,000 and promises to spend an additional $20,000 promoting the meet.

St. Louis Aviation in October.

At the first special meeting of the whole membership of the Aero Club of St. Louis ever called, 40 odd members voted March 29 to hold a free aviation tournament, from October 5 to 15, just preceding the international balloon race. All of $20,000 needed for this public exhibition is assured, $8,000 being actually subscribed.

It is expected that the club will secure from three to six aviators who have already been successful with aeroplanes that fly. No contracts will be made for the mere appearance of famous aviators in St. Louis. None will be paid who fail to fly. It is not yet known who they will be or what machines they will use, although it is possible Hamilton and Willard and operators of Wright flyers will be among them.

Oregon Inventor Holds "Meet."

The Commercial Club of Sutherlin, Ore., is planning an aviation "meet" of its own for May 17-19. On this date there is expected to be held an exhibition of a new biplane invented by J. W. DePries of that town. Any aviator is asked to compete in contests for which prizes are offered. A working model of the invention is now on exhibition at the office of the club. Those interested should address C. T. Colt, manager, Commercial Club.

Exhibition for New York.

New York, April 14.—Flying will be seen near New York either the latter end of June or the first of July; so goes a vague rumor. It may be that some of the men interested in the Wright Co. will finance a series of flights.

Arrangements have been practically concluded with the Wright Co. for an open exhibition at Atlantic City.

Mineola Aviation Center.

The largest aeroplane shed, so far as known, is being constructed by the Aeronautical Society on its grounds at Mineola, N. Y. It is located 2,000 ft. south of the Old Country Road, adjoining the fair grounds. The length has now been made 150 ft. by 48 ft. in width, 15 ft. high. Six tons of corrugated iron are being used in its construction. Practically all the space has already been applied for. Rental is at the rate of $1 per 100 sq. ft. per month. This will be done by the end of April at the latest. Several members now have their machines temporarily in nearby sheds and barns and others will begin work on machines as soon as the shed is finished.

The Aero Club of America has two one-machine sheds on its piece of land within a short distance. One of these is already occupied by W. L. Fairchild.

Dr. J. M. Gibbons has the machine of the Thousand Islands Aero Club in his own canvas shed on the grounds and there are still other individuals who have machines in the vicinity.

A large crate or two have arrived at the station addressed to Capt. T. S. Baldwin, the dirigible man. Perhaps it is an aeroplane—who knows?

Ballooning in New England in 1910

By Chas. J. Glidden, President Aero Club of New England

THE aero clubs organized in the New England States will open the balloon season about May 1. These clubs, now located at Hartford, Conn.; Pittsfield, North Adams, Springfield, Lowell and Boston; also the clubs at Rutland, Vt., and Manchester, N. H., will use the ascension stations at Pittsfield, North Adams and Springfield, Mass.; Rutland, Vt., and Manchester, N. H. There are two balloons at North Adams, one at Pittsfield and three at Springfield.

The Aero Club of New England will, in co-operation with the Aero Club of Springfield, maintain a caretaker and balloon rigger at Springfield, who will take charge of ascensions under auspices of the clubs at all stations. At Springfield the balloons "Massachusetts" and "Springfield," each 56,000 cu. ft., and the "Boston," 35,000 cu. ft., will be used to open the season. Then the two large balloons will make several flights from the Pittsfield station, which is specially equipped with facilities for supplying the balloon with gas for long-distance trips. A special gas holder has been built for this purpose, and four large storage rooms.

Forty members of the clubs and their friends, including several ladies, have already booked for flights, and a number from New York will use the Springfield station. There will be four skilled pilots available at all times, and two or three have signified their intention of making the requisite number of flights to qualify as international pilots this season. Several ascensions will be made for scientific purposes at the time the Halley comet is nearest the earth. An attempt will be made to cross Mt. Washington and win the trophies for long-distance flights, and landing in Canada. One of the largest insurance companies in the United States will send a representative up in one of the club balloons to ascertain the liability as regards accidents with a view of recommending a form of special insurance for pilots.

The making of three new pilots last year, H. H. Clayton, J. Walter Flagg and Jay B. Benton, will, with William Van Sleet, at Pittsfield, N. H. Arnold and Dr. R. M. Randall of North Adams and Harold T. Pierpont of Springfield and the writer, give Massachusetts seven pilots, and enable more members of the clubs and their friends to make ascensions.

Probably one of the most interesting ascensions valuable to science will be that of Wilhelm Heinrich, the sightless tenor singer of Dr. Edward Everett Hale's Church, who is also a composer of music and songs and a magazine writer. Mr. Heinrich has been sightless since the age of six, and there is no record of a person thus afflicted making a balloon ascension. I shall use the balloon "Boston" from Springfield early in May, and if conditions are right, try for an elevation of one mile. At this elevation Mr. Heinrichs will compose a song, and on landing give to the world his impressions. Before starting, he will have an opportunity to examine the balloon and be present during the inflation, through the sense of touch watch all details of preparation.

The ascensions for the observation of Halley's comet will be made on May 6 and 18. The one May 6 in the "Massachusetts" will be at the time the earth is nearest the orbit of the comet, and when it is expected fragments of the comet known as meteorites may be in the air. Passengers in the balloon with me will be Prof. David Todd of Amherst College, Mrs. Todd and Jay B. Benton, city editor of the *Boston Transcript*. The start will be from Springfield or Pittsfield soon after sunset.

On May 18 the party will compose scientists from some of the other New England colleges, and at this time the earth will pass through the tail of the comet, its head being nearest to the earth—i. e., 12,000,000 miles away.

Through the Aero Club of New England the following balloon trophies have been offered to be competed for during the year 1910:

Automobile Club of Canada, to the pilot starting from a point of latitude not farther north than Poughkeepsie or in the State of Massachusetts and landing on the Island of Montreal.

La Patrie Montreal, to the pilot starting from a point of latitude not farther north than Poughkeepsie or in the State of Massachusetts and landing nearest the office of *La Patrie*.

H. Helm Clayton, the "*Herald* trophy" won by him in 1909, to the pilot landing within 10 miles of Boston Common that starts from a point 100 miles from Boston Common.

H. Helm Clayton, the "Fitchburg trophy" won by him in 1909, to the pilot landing nearer Boston Common than six miles who starts from Fitchburg, Mass.

Poland Springs Hotel Co., to the pilot landing within two miles of the hotel starting from a point in New Hampshire, Vermont or Massachusetts.

Mount Washington Hotel Co., to the pilot landing on the hotel grounds starting from a point not nearer than Manchester, N. H., or Rutland, Vt.

Cortlandt F. Bishop, to the pilot making the longest flight in 1910, starting from a point in New England.

Certified record of starting and landing must be sent to the secretary of this club, giving name of balloon capacity, time up and down, highest elevation and air line distance. Balloons with experienced pilots can be hired at Springfield, Pittsfield and North Adams and of the New England Club.

John Berry continues to talk and to get stories printed in the newspapers to the effect that he is going to ascend to the top of Mt. McKinley in a spherical balloon, propelled and steered by means of propellers. Mr. Berry's own tests have proved, what might have been known before, that the action of a propeller in a spherical balloon, merely causes the aerostat to rotate, without progress in any direction except that influenced by natural air currents.

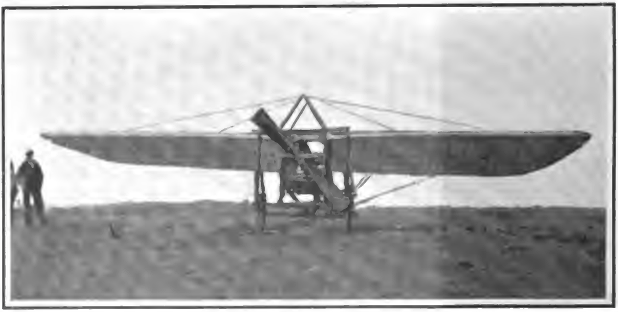
Lewis B. Ely Balloon Trophy.

Although others are promised the club by men interested in the advancement of aeronautics in St. Louis, the Lewis B. Ely long distance challenge trophy is at present the only challenge cup or prize open only to members of the Aero Club of St. Louis. This trophy, to be given the aeronaut who holds the club balloon record for distance, is now in the possession of Albert Bond Lambert, who secured it by a voyage of 665 miles, October 15, 1909. The first holder was S. Louis Von Phul, who won it by his 550-mile voyage in the Centennial balloon race, October 4.

Soon the Aero Club of St. Louis expects to announce standing trophies for the longest, in point of endurance and distance, balloon trip made during the course of each year, to be held by the annual winner until the year following; cups and cash prizes for aeroplane flights by club members, and perhaps a dirigible balloon trophy.

William F. Assman, who on April 10 made his solo balloon ascension in qualifying for a pilot's license, has ordered a racing balloon from the French-American Balloon Co. He expects to compete in the Peoria race, July 4, and in the national elimination event from Indianapolis, September 17. Mr. Assman will be the seventh pilot of the Aero Club of St. Louis.

H. Eugene Honeywell, director of the French-American Balloon Co., says that interest in ballooning does not lag, but that, on the contrary, the spherical is more popular than ever. Honeywell has received orders during the past two months for four new balloons, and expects to construct three others for western aero clubs taking up the sport before very long.



S. Y. Beach's Monoplane

News In General

A. C. A. Recognizes Wright Patent.

GORDON BENNETT MEET.

A conference was held on April 9 between Wilbur Wright and Andrew Freedman, representing The Wright Co., and the Aero Club's committee, of Philip T. Dodge, W. W. Miller, L. L. Gillespie, Wm. H. Page and Cortlandt F. Bishop.

At this meeting arrangements were made by which the Aero Club recognizes the Wright patent and will not give its sanction to any open meet where the promoters thereof have not secured a license from The Wright Company.

MEMBERS HAD NO SAY.

No meeting of the members was held to discuss this most important action—one the like of which has probably never before come up for settlement before any organization in the world and is not likely to again, as far as aeronautics is concerned.

"OUTLAW" MEETS MAY BE HELD.

It does not appear that promoters cannot get up a meet, licensed by The Wright Company, without bothering with any sanction of the A. C. A.

The only loss such "outlaw" meets could suffer would be the non-recognition by the A. C. A. of any new records, but "records are records" whether made under one control or another. However, the A. C. A. can thereafter prevent competitors in outlaw meets from entering their contests.

Of course, any one may give exhibitions by machines not infringing or conduct meets with such machines.

BISHOP IN PECULIAR POSITION.

President Bishop, of the club, is put in a queer position. One of the organizers of, and alleged to be a stockholder in, the Herring-Curtiss Co., against which company an injunction was granted The Wright Company and which has been building machines under a $10,000 bond, Bishop now publicly "refuses to countenance the infringement" of the Wright patent.

The following statement was given out by Wilbur Wright:

> It was unanimously decided that every effort should be made to place aviation in this country upon a popular and liberal basis.
>
> The substance of the agreement was that the Aero Club of America recognizes the rights of the owners of the Wright patents under the decisions of the federal courts and refuses to countenance the infringement of those patents as long as these decisions remain in force.
>
> In the meantime in order to encourage aviation both at home and abroad and in order to permit foreign aviators to take part in aviation contests in this country it was agreed that the Aero Club of America, as the American representative of the International Aeronautic Federation, should approve only such public contests as may be licensed by The Wright Company and that The Wright Company, on the other hand, should encourage the holding of open meets or contests wherever approved as aforesaid by the Aero Club of America by granting licenses to promoters who make satisfactory arrangements with the company for its compensation for the use of its patents. At such licensed meet any machine of any make may participate freely without securing any further license or permit. The details and terms of all meets will be arranged by the committee having in charge the interests of both organizations.
>
> This assures beyond question that the international contests for the trophy won in France last summer will take place in the United States next October and furthermore that numerous aviation exhibitions and contests will be given throughout the country wherever the requirements are adequate and under the auspices of the Aero Club of America.
>
> This announcement does away with any uncertainty regarding the attitude of the Wright Company and of the Aero Club of America toward the future of aviation in the United States and insures the success of aeronautical sport during the coming season.

Under this agreement individual aviators with infringing machines will have nothing to do with the Wright Brothers, unless they chance to be the promoters of the meeting. If an aviator with an infringing machine desires to participate in a meeting he will first ascertain if the meeting is licensed by the Wrights. He will then ascertain who the promoters are, and will go directly to them to make his arrangement for flying.

Foreign aviators will be perfectly free to enter for the international contest or in any other sanctioned meeting with any infringing machine they wish to use, but they will be promptly enjoined if they attempt to fly without license or sanction, as was done by Paulhan.

GORDON BENNETT RACE.

Whoever promotes the Gordon Bennett race will have to secure a license from The Wright Company. Mineola now seems to stand as good a chance as any site for the international meet, providing funds can be secured for the financing thereof. What the Baltimore and Washington Clubs will have to say about this can be guessed. St. Louis is now bidding strongly for it.

BISHOP SAILS.

Bishop left for Europe on the 14th of April to be gone until the first of October. In the meantime the art in this country will have to worry along as best it may under its enormous handicap.

Ask Bishop To Resign.

Six very naughty insurgent members of the A. C. A. had the audacity, a few days before the arrangement permitting the holding of the international race without interference was made with The Wright Co., to deliver a letter to Bishop asking that he resign "on the broad-minded premises of justice and patriotism. "For the cause of the better development of aeronautics in America, we ask you to waive personal prejudice and to step aside." to "restore public confidence in the Aero Club of America."

The letter called attention to the necessity for prompt action in regard to the international race, for the foreigners have displayed no intention of coming for fear of possible legal bars to be erected by the Wrights; to the fact that the date has been fixed so late in the year when calm days are infrequent; that six months have passed since Curtiss won the cup without the club's taking any steps to obtain immunity from the Wrights in order to assure foreign contestants; that Bishop spends the greater part of the year abroad; that the dilatory tactics practiced have caused severe criticisms by various cities that want the race; for shifting the blame in the newspapers on the Wrights for the alleged inability to secure foreign entries.

Mr. Bishop has not resigned—as yet. He told the newspaper men, it is alleged, that he did not bother reading letters such as this from indignant members—that his secretary opens the mail and throws epistles of this ilk in the waste basket. The insurgent members claim that too many chances for the betterment of the club figuratively meet a similar fate.

At any rate, a number of members who said they could not let their names be known for fear of the presidential influence, took occasion to express coincident views the day the letter was made public. Then, too, there has recently entered into the club some new blood from which a more hopeful condition is expected by these rebellious, bold and bad buccaneers. "And not only that"—but certain suits are still pending.

It appears as though, some months ago, arrangements might have been made with the Wrights in regard to the international meet itself without the question of any percentage entering into the matter. In the published statements of Mr. Wright no mention was at that time made of expecting financial consideration. If this is so, the dilatory methods of the A. C. A. are open to criticism.

AERO CLUB MEN MIGHT HAVE BOUGHT WRIGHT PATENT THREE YEARS AGO.

About three years ago prominent men in the club allowed the Wright patent to slip through their hands. A fund was partly raised, something like $50,000, out of a suggested figure of $100,000.

"We were approached by a committee of the Aero Club of America, which wanted to buy our patents," said Wilbur Wright.

"The offer looked big to us then and we might have accepted it, but the Aero Club committee allowed the matter to drag along until we put the question squarely up to them. We never received a reply, so we went ahead and developed our invention ourselves. But if a very small part of the money that has been spent on the encouragement of aviation since our invention was patented had been given to us, the invention would now be free to the world.

"We have demonstrated the practicability of our machine for military and sporting purposes. We have proved that we knew what we were doing, and that we did the right thing the right way. Ours was the first heavier-than-air machine that ever flew under its own power. My brother and I now purpose enjoying the fruits of our labor."

Washington Club Sends Ultimatum To A. C. A.

Washington, April 11.—At a meeting of the Washington-Baltimore Aviation Committee held here to-day a resolution was adopted to compel the Aero Club of America to take immediate action in completing the plans for the international aviation meet of 1910, which will be held in this country. The text of the resolution was as follsws:

"Resolved, That the Washington-Baltimore Aviation Committee withdraw as a candidate for the international aviation meet of 1910 unless the time and place be decided upon by the Aero Club of America within 10 days from this date and assurance be given by them of the participation by a sufficient number of foreign aviators to make the meet a success."

Dr. A. F. Zahm, secretary of the committee, sent a telegram to the Aero Club of America notifying the club of the action taken at the meeting and transmitting the text of the resolution adopted.

It is a foregone conclusion, however, that the event will not approach in magnitude that of last year.

Herring-Curtiss Co. in Bankruptcy.

The Bank of Hammondsport and two other creditors of the Herring-Curtiss Co. have filed a petition in involuntary bankruptcy and a Receiver was appointed on April 2. A number of the creditors of the company have issued a letter asking the others to co-operate in the proceedings.

GOOD OUTLOOK.

The letter issued contains the statement: "It is believed that not only can the claims be paid in full, but also that there is an excellent opportunity for a continuation of the business whereby the creditors will be benefited."

Wright-Curtiss Suit Appealed.

Inasmuch as both parties to the Wright-Curtiss action wanted to go to the Court of Appeals with the preliminary injunction matter, there was no argument at the rehearing in March, but all agreed that additional evidence and arguments should go into the record in order that an appeal might be taken at once. Case on appeal will probably be heard the latter part of May.

J. Edgar Bull has been retained with Emerson R. Newell in behalf of the defendant.

Auto-Aero Show at Buffalo.

Buffalo, March 26.—Aero divisions to shows of all kinds are *de rigeur* nowadays. The sportsmen's show, running from the 21st to the 30th, has three full-sized flying machines, an aeronautical engine exhibit, and five large models loaned by members of the Buffalo Aero Club. Dr. George Francis Myers is showing his circular biplane and an ornithopter which, it is claimed, has lifted a foot off the ground. The Elbridge Engine Co., of Rochester, have one of their featherweight aero engines, water cooled. Among the models is that of R. W. Magruder, fully equipped with a 1 horse power motor.

Hermann A. Brunn, a Buffalo body builder who built the touring body on Mrs. Leslie Carter's car, is making arrangements to build one or more aeroplanes this coming summer.

Death of Thomas F. Walsh.

Mr. Thomas F. Walsh, president of the Aero Club of Washington, who had been seriously ill since last December, died at his residence on Friday, April 8, of heart failure, brought on by pneumonia.

Mr. Walsh had been unanimously elected president of the club two years in succession since its foundation, and did much to increase the membership and usefulness of that organization. He was also unanimously elected chairman of the Washington-Baltimore Aviation Committee, and labored earnestly to secure and prepare for the international aviation meet of 1910. His death is a loss keenly felt by all those interested in the promotion of aeronautics in America.

Mr. Walsh obtained great wealth through mining. He was one of the national commissioners to the Paris Exposition in 1900. He was a member of the Washington Academy of Sciences, of the National Geographic Society, of the American Association of Mining Engineers. He served a term as president of the National Irrigation Association.

He was closely associated with Washington business enterprises. Two large office buildings were erected by him. In addition, he was the owner of the property, formerly known as the Oxford Hotel, besides a large amount of other real estate. He was a member of the executive committee of the Washington Board of Trade.

He was a member of the Denver Club, of the Metropolitan and Cosmos Clubs, in Washington, and of the Metropolitan Club in New York. He also belonged to the Travelers' Club of London, American Political Life Association, El Paso Club, Automobile Club of America, Automobile Club de France, the Pilgrims of London, the Pilgrims of New York and others.

Aeronautic Calendar For U. S.

April 21-26—San Antonio, Tex., exhibition flights by Curtiss' machines.

May 2-3—Atlanta, Ga., exhibition flights by Hamilton during auto races, in Curtiss' machine.

May 13—Dayton, O., exhibition flights with Wright machines.

May 14-15—San Jose, Cal., aviation meet—indefinite.

June 13-18—Indianapolis, Ind., "First Nat. Aviation Meet," with exhibitions with Wright machines and open to all others.

June 19-26—Nashville, Tenn., exhibition flights at Military Tournament, by Curtiss aviators.

June 22-25—Minneapolis, Minn., exhibition by Curtiss' machines—not definite.

July 1-10—Atlantic City, date and conditions not certain.

July 5-6—Peoria, Ill., balloon race.

July or August—Philadelphia, Pa., aviation meet.

August 12—Indianapolis, Ind., balloon race.

Sept. 17—Indianapolis, Ind., elimination race for Gordon Bennett balloon race.

Oct. 5-15—St. Louis, Mo., aeroplane exhibition.

Oct. 17—St. Louis, Mo., Gordon Bennett balloon race.

Oct. 22—Place unnamed, Gordon Bennett aviation race.

————, Cleveland, O., aviation meet.

————, Buffalo, N. Y., aviation meet.

Dec. 1-8—Chicago, Ill., aeronautic show in the Coliseum.

Arrangements have been made for a Curtiss machine to fly at each of the big state fairs under the control of the National State Fair Association, comprising principal state fairs east of the Dakotas.

Incorporations.

Aero Club of Buffalo, Buffalo, N. Y.

American Aero Exhibition Co. of College Park; capital, $200,000. Formed for the purpose of handling the international or any other race or contest. The incorporators named are William H. Mason of Minnesota, Jerome H. Joyce of Baltimore, Frederick L. Fox of Washington, Robert E. Routh of New York and William A. Stuart of Pittsburg.

International Aeroplane Co., 12 Geary St., San Francisco, Cal. Gerald Geraldson, secretary.

Goodland Aviation Co., Goodland, Kan.; $30,000. Incorporators, W. J. Purvis, C. A. Wilson, G. L. Calvert, F. H. Smith, H. W. Stewart and others.

Fostoria Aeroplane Co, Fostoria, O.; $10,000.

H. Farman Flying with Two Passengers

Foreign Letters

England.

English flyers are growing in numbers. The Hon. Maurice Egerton, Hon. C. S. Rolls (Short-Wright), J. T. C. Moore-Brabazon (Short), A. V. Roe (triplane), H. A. Cailler (Bleriot type), J. W. House (Bleriot), and Captain A. Rawlinson (H. Farman) have all been making flights from a half to ten miles.

P. Grace is another who has made short flights on his Short-Wright and Voisin machines.

Mr. Rolls flew around the country in his Short-Wright for 26 min. on March 24. Several other British experimentors and amateurs have been practising.

UP 45 MINUTES.

Ogilvie, in his Wright, has lengthened his flights up to one of 45 minutes and takes up passengers.

Trials of the new army dirigible "2-A" have continued with good success.

OLYMPIA SHOW.

The Olympia show from March 11th to 19th proved a marked success. There were thirty-five aeroplanes exhibited, and a good share of these were of British make. Forty-five motors were shown from 28 different makers, and of these many were also British. Twenty two of the thirty-five were monoplanes. This shows a remarkable practical interest in England during the past year. The great majority of the aeroplanes shown were types which had actually flown.

A very big assortment of sundries and supplies were to be seen at the various stands.

The "Daily Graphic" is equipping another huge balloon to make an attempt on the long distance record. The capacity of the gasbag is 163,896 cubic feet, and its diameter 68 feet. The lifting capacity is 6,600 lbs. The balloon is all white, and has a double-decked car of white wicker. The pilot is A. E. Gaudron, as before, and with him will go Captain Maitland and A. C. Hunter of the "Graphic."

France.

WONDERFUL WORLD 3-MAN RECORD.

On March 5 Henry Farman, in a new-style machine, carried a woman and a man in addition to himself for 1 hr. 2 min. 25 secs. The previous record was 10 min. 39 secs. (Farman at Rheims).

The end of March he won a prize for a cross-country passenger flight, going 10 kil. with Mme. Darty.

HALF HOUR 3-MAN FLIGHT.

Roger Sommer is now teaching aviators on his own machines. Two men besides the aviator were carried for 34 mins.

NEW 2-MAN RECORD.

On April 8 at Mormelon Daniel Kinet flew 102 miles with a passenger. He was in the air two hours and twenty minutes. This is the record for time and distance with a passenger.

HOUR FLIGHT..

Gaudart, at Juvisy, was up for 1 hr. 10 min. the first week in March. Maurice Farman was also up for an hour the same week at Buc. Molon (Bleriot) flew for 50 kil. at Havre in a strong wind. On March 12 he was up 1 hr. 24 min. On the 15th and 16th he was up 35 min. and 1 hr. 4 min. respectively. Sommer flew for 1 hr. 5 min. around the country at Mouzon on April 5.

Grahame-White made his first flight on a H. Farman at the Chalons school on March 26, one of 50 kil.; then he took a passenger for 20 kil., and the next day flew for 65 min.

DIRIGIBLE UP 5 HOURS.

Repairs having been completed, the military "Col. Renard" has had a 5-hour test over the country 'round Beauval.

PROPELLER DROPS IN AIR.

Leblanc's propeller dropped off when he was flying his Bleriot at Pau, but a successful glide to ground was made.

LOSES WAY IN AEROPLANE.

Van den Born, a fairly new aviator, flew from the H. Farman school at Chalons to Rheims for lunch, a 20-minute fly. Returning, he lost his way in the hills and Chavez, also a Farman pupil, went out to look him up. He rose to a height of 510 meters, where he was able to see the wanderer. Van den Born had landed once to inquire the way from a farmer. He covered about 40 miles. Chavez was up for three-quarters of an hour.

THE FARMAN SCHOOL.

Henry Farman's pupils do finely. Lieut. Cammerman, one of the military pupils, flew for 1 hr. 8 min. Others have got up to flights of 10 kil. One man, Jeannin, who is teaching himself, covered 30 kils. on his second trial. After the fourth lesson, Crochon, another pupil, flew for an hour. About a dozen students are on hand.

Flying at the Chalons military camp is restricted to only a couple of hours in the early morning and evening. Now the authorities are afraid the flyers will go over the batteries and quarters and are imposing more restrictions. Farman is to move his school to Etampes.

A Bleriot agency has established a school at Chalons, along with the Voisin and Farman aero colleges.

AMATEUR WINS BIG PRIZE.

A new aviator named Dubonnet has been making good flights on a new aeroplane known as the Tellier. After four days' practice he was able to fly 40 mins. at Juvisy. On April 3 he won the $2,000 "Prix de la Nature" for a 100-kil. flight. His time was 1 hr. 40 min. and distance 104 kil.

The membership of the Aero Club de France has now reached the 1,500 mark. This is an increase of 470 over last year. The club has put up $80,000 in prizes for 1910 already. On April 4, thirteen aeronautic engines were rigidly tested and tried out.

CANNES.

The Cannes meet opened on March 26. H. Farman's pupils, Crochon and Christiaens and Edmond were best, flying 1 hr. 9 min. 29 sec., 1 hr. 9 min. 2 2-5 sec. and 33 min. 45 2-5 sec., respectively. Other flyers were Frey (Farman), Baratoux (Wright), Molon (Bleriot), Sands (Antoinette), Reimsdyck (Curtiss), Weisenbach (Wright), Rigal (Voisin). The longest flight on the second day was 53 min., by Crochon. Reimsdyck's flying was good. He won the prize in "starting at a fixed time," doing so to the smallest fraction of a second. Popoff (Wright) flew out over the sea on a 20-min. flight.

Germany.

"PARSEVAL V" UP 3½ HOURS.

The small "Parseval V," belonging to the Imperial Automobile Club, has had good tests, one covering 3½ hrs. The bag is 30 m. long, of 1,200 cu. m. capacity.

CLOUTH UP 2 HOURS.

The Clouth dirigible was out for 2 hrs. over the forest of Cologne.

It is reported that the War Department will buy a Farman and an Antoinette for instructing army officers.

Several are practising on Wright machines at Johannisthal. One man has been making flights up to 7½ kil. in an Antoinette.

Hintner, a new German aviator, has been able to fly for 5 kil. in a strong wind at Johannisthal. Grade has returned from the Egyptian meet and is flying again at Bork.

Switzerland.

WRIGHT MACHINE FLIES AT 6,000 FT.

Capt. Engelhardt has been flying over the snow over St. Moritz Lake. In one flight he was up 32 min. The altitude of this lake is 6,400 ft. A small biplane cell has been attached in the angle formed by the upper rear outrigger and the vertical tail.

Italy.

Italy is coming to the front. The Ateliers Voisin Italie Septentrionale are building Voisins. Sr. Cagno has flown a half hour in one. A school has been established near Padua, it is said, where five different makes of aeroplanes will be used.

Mexico.

The Mexican Government has appointed an engineer officer to study aviation and report to the War Department on the acquisition of an aeroplane.

Monaco.

Rougier's flights in the Voisin have been very sensational. Almost daily flights were made the first part of March from the Quay at Monte Carlo to Cape Martin and back. One flight over the sea lasted 29 min.

Russia.

The Russian Government have decided to buy two Zodiac 2,000 cu. m. airships to their fleet. Two Parsevals are also said to have been bought.

Spain.

Exhibition flights have been going on at Barcelona, Seville and at San Sebastien.

Death of Moedebeck.

Major H. W. L. Moedebeck, one of the foremost authorities on aeronautics, has passed away. Born in 1857, he became interested in the art in 1883. In the year following he was attached to the military station at Tempelhof. He founded the Berlin Society for Aerial Navigation and, in 1897, the Illustrierte Aeronautische Mitteilungen, the official German aeronautical organ. He was its editor up to the day of his death. His most valuable work, "Pocket Handbook of Aeronautics," is known to all experimenters.

He was a member of the Permanent Commission for Scientific Aeronautics and of the German Commission for Aeronautic Maps.

Le Blon Meets Death.

Le Blon went to San Sebastien, Spain, during Easter to give exhibition flights over the sea in a Bleriot. His engine stopped on one occasion and he landed in the sea, but was towed ashore without trouble. On April 2 the machine fell in the water. It was 17 minutes before anyone got to Le Blon. He seemed to be only slightly bruised and his death has been directly attributed to drowning.

Whether the Gnome motor gave out or not is not known. Bleriot has declared against the big 7-cyl. rotary 50 h. p. motor on a little machine like the "XI." Le Blon was famous as a racing auto driver. At the Doncaster meet last year he did some good flying.

Balloon Accidents.

An extraordinary balloon accident occurred in Germany on April 3 involving the loss of three lives. The balloon was started from Stettin in a gale, but in ascending it collided with telegraph wires and then with a factory. These impacts almost tore the car from the gas bag. The balloon was swept out to sea, landing in the Baltic Sea near Herrenbad a few hours later. The balloon carried Dr. W. H. W. Delbruck, member of the Reichstag, and Messrs. Semmelhardt, Benduhn and Heim.

In the collision all were more or less injured. The valve cord was broken and the rip cord was used as the balloon dropped heavily to the water.

All were exhausted and three sank, only Semmelhardt being rescued. One body has not yet been recovered.

On April 4 Prof. R. Abegg and two companions left in a balloon from Breslau. In the landing, after two had gotten out, a gust of wind dragged the balloon before Prof. Abegg could get out. He was thrown out and died from his injuries.

Aeronautics' Permanent Aeronautical EXPOSITION

INFORMATION BUREAU.

On May 1 AERONAUTICS will remove its offices to new and larger quarters in the building just completed at No. 244-252 West Fifty-fourth Street, just off Broadway.

PERMANENT AERO EXPOSITION.

Additional space has been secured for our Permanent Exposition and Bureau of Information which we will inaugurate on May 1.

It is our intention to have on exhibition everything pertaining to aeronautics manufactured in this country, at least. Our daily visitors can then see the various products and make their selection without visiting the various factories. This will prove a great boon to the purchaser and maker alike.

This exposition is open to any manufacturer, whether an advertiser or not. It will serve the manufacturer as a New York office and salesroom. It will serve the prospective buyer as an information bureau, where he can see samples of what he wants and secure all the information available in regard to each product.

The building is fireproof, extremely well lighted and convenient to all lines of transportation. Our office will be more than ever the national headquarters for anything aeronautic.

This is the first time that a bureau of aeronautical supplies has been established. A full supply of data on each particular exhibit will be constantly on hand, and it will not be necessary for a prospect to let his name be known to a single maker, and at the same time he can view the products of every factory in the line in the country.

TO MANUFACTURERS.

We want to hear from you relative to this Exposition. You cannot afford not to have an exhibit. We will be glad to send you further particulars and to aid in any way possible.

EXHIBITORS.

While very little time has been available to arrange for exhibits, one can be assured that the line will be complete. Owing to the short notice, many firms cannot have samples ready in time for the opening. Engine builders are all more than busy with orders. The following firms will be definitely represented:

Hartford Rubber Works Co., Tires.
Wittemann Bros., Gliders and Supplies.
Warner Instrument Co., Aerometer.
Requa-Gibson Co., Motors and Propellers.
Elbridge Engine Co., Engines.
Pennsylvania Rubber Co., Tires.
Zurn Oil Co., Oils.
Easton Cordage Co., Engines.
C. E. Conover Co., Cloth.
Edwin Levick, Photos.
Philadelphia Aeroplane Co., Motors, etc.
Roebling Co., Wire Cable.
Victor L. Brunzel, Varnish.
El Arco Radiator Co., Radiators.
J. A. Weaver, Wheels, etc.
Whitehead Motor Co., Motors.
Greene Co., Propellers and Parts.
Bosch Magneto Co., Magnetos.
Auto-Aero Supply Co., Supplies.
R. I. V. Co., Ball Bearings.
J. Deltour, Bamboo.
J. S. Bretz Co., Magnetos, Bowden Wire.
Aero Supply Co., Supplies.

CLUB NEWS

The **Aero Club of Illinois** expects to have a show in the Chicago Coliseum December 1-8, 1910. The backers are James E. Plew, Chicago agent for the Curtiss; Victor Lougheed, author of "Vehicles of the Air"; Charles E. Bartley, a prominent attorney, and R. R. Reilly, of the well-known firm of publishers, Reilly & Britton. Mr. Chanute is president of the club.

Requests for space should be addressed to the secretary, 240 Michigan Ave.

AERO CLUB OF AMERICA BANQUET.

New York, March 25.—The banquet hall of the St. Regis was filled last night with members of the **Aero Club of America** and their guests on the occasion of the fourth annual dinner.

Those seated at the guests' table were: J. C. McCoy, Com. E. C. Benedict, F. N. Doubleday, Prof. A. Lawrence Rotch, William M. Page, Cortlandt F. Bishop, Hon. J. Sloat Fassett, Gen. James Allen, Glenn H. Curtiss, Charles J. Glidden, Colgate Hoyt and Rennold Wolf. On the table were the famous trophies won by Curtiss and Mix and overhead were hung models illustrating the three types of aerial locomotion.

Following the precedent established last year, three of the speakers studiously avoided any very great mention of aeronautics for fear of displaying, perhaps, their lack of knowledge on the subject. Professor Rotch and Brigadier-General James Allen, Chief Signal Officer of the Army, however, spoke solely on aeronautics.

In introducing the speakers, President Bishop called attention to the records made in winning the two Gordon Bennett cups on their first offering and the fact that the government owned the Baldwin dirigible and an aeroplane. The dirigible he characterized as too small and "not now available" and the Wright machine "not the latest development."

FASSETT FOR AMERICAN SUPREMACY AT ANY COST.

Hon. J. Sloat Fassett, M. C. ,expressed himself in glowing language as being heartily in favor of providing the United States with ample means at any time for maintaining supremacy in any line. He frankly denied knowing anything about the attitude of Congress in regard to aeronautical appropriations for matters of this nature are kept rather under cover since the Langley fund, he said. "Congress has spasms of economy. You must catch it between spasms." Pleading ignorance in graceful terms of future possibilities of flying, he risked, on the other hand, prophesying the conquest of the air would work greater changes than had any of the great inventions of the past. There will come into question future laws, customs, rights of owners of land, etc.

BISHOP'S LAWYER URGES CONDEMNATION OF WRIGHT PATENTS.

William M. Page, Bishop's attorney in the recent suits brought against him by the rebellious members of the club, was second on the list. After distributing verbal bouquets to each of his associates at the table of honor, he rather startled his hearers when he suggested that Congress pass a law so that any patent which "ran through the warp and woof of prosperity be condemned." If the government wanted his house and land for any purpose it would condemn the property and pay him its reasonable value. He would apply the same plan to patents. One to five millions of dollars he would offer the Wrights as a reward for their achievements and "throw open the world to aerial navigation." The present situation he called the "menace of the Wrights."

GENERAL ALLEN'S REMARKS.

First-class powers, excepting the United States, said General Allen, are providing themselves with aerial fleets, but he expressed no alarm at the present apparent inactivity of Uncle Sam in matters aerial. He felt sure that our government would in proper time be a liberal purchaser of aeronautic material and vehicles and take due care of the country. In comparison, he referred to the great work of Germany.

PROF. A. LAWRENCE ROTCH.

Prof. A. Lawrence Rotch, director of Blue Hill Observatory, at Boston, followed General Allen with a reference to the connection of Boston with aerology. Two of her illustrious citizens were identified with the art; Franklin and Dr. Jeffries, who crossed the English Channel in a balloon. Harvard and the Massachusetts Institute of Technology will soon, he said, have regular courses in aeronautics. Then he told of the forming of the Permanent International Commission for Scientific Aeronautics in 1896, two years after he anticipated some of the Commission's work at his Blue Hill Station. In the future he prophesied maps of the air currents.

RENNOLD WOLF.

Wolf proved to be the wit of the evening. With the utmost naïvety he charged Bishop with "enticing a maiden. In matters aeronautic I am a virgin. I have no warp in my plane and on charges of ethereal misconduct can prove a complete alibi." The only connection he ever had with such things, he said, was during his boyhood, when he was hit on the toe by the sandbag of a professional aeronaut. "The Romeo of the future will not climb to a dinky balcony, but will fly his monoplane into Juliet's chamber through the window and alight on the bedpost. Camille will be rescued by a triplane and carried away to a drier climate and save both her health and reputation." In conclusion he decided he would be content to continue his study of aeronautics through a correspondence school and at dinners of the Aero Club.

Pictures were shown of the Rheims and Los Angeles flights and Bleriot crossing the Channel.

The Wrights were conspicuous for their absence. The new club book states that they have been honored with the license of the Aero Club of America to fly.

The new rooms of the **Aero Club of America** in the United Engineering Societies Building, 29 West 39th St., were opened for the inspection of members and guests on Wednesday evening, April 13, at 8.30 o'clock. During the evening moving pictures illustrating the recent progress in the science of aviation were shown in the auditorium of the building.

The **American Aeronautical Society**, which is claimed to be the oldest aeronautical organization in the United States, organized in 1887, has gone through some changes, but in main it has remained the same, that of scientific investigation.

Recently it has been decided to extend its scope, to increase its power by an increase in membership and secure rights and protection, legal, financial, political and co-operative.

1st. Legal rights will be secured by a combined effort to protect the ideas and inventions against grasping individuals or corporations by a well sustained legal opposition to any usurpations by monopoly tending to suppress legitimate progress and development of aerial navigation.

2nd. Financial advantages will be secured to the members irrespective of invention for the monthly contributions toward enabling members with ideas to secure full and complete legal protection and assistance, financial opportunities for exploiting their invention. The consideration being a participation in the result so obtained.

3rd. Political action has been shown necessary for the purpose of obtaining substantial governmental aid and full investigation of various ideas, which result will be obtained by a large and active membership.

4th. Co-operative union of the individual abilities into one compact body will bring about a mutually permissible use of the varied devices giving the greatest publicity and cheapest thorough workout of the ideas in various combinations, enabling the members to obtain the royalties rightly due them, and an easily attainable construction, the most highly developed and safest aircraft at popular cost, yet fully protected by registration licences and mutual watchfulness.

An Aero Club has been formed at Tufts College, Mass. Edwin P. Bugbee is president, Geoffrey W. Talbot secretary-treasurer. Prof. Harry G. Chase has offered to pay for a glider.

The Aeronautical Society is now the new name of The Aeronautic Society. At a meeting on April 7 a new constitution and by-laws were adopted to accommodate circumstances which have come up which could not be foreseen when the society was first organized. The society was formed originally, as now, under the stock corporation law, although it is not a body for the conduct of any business. The idea was novel, and a perfect organization was found to have not quite been realized under the first set of by-laws. Because of the reincorporation, it was necessary to make some change in the name, and the simplest method was adopted; after a great deal of discussion, that of adding "al" to the word "aeronautic." It is believed that the new set of by-laws, which were framed by Lawyer Thomas A. Hill, are very nearly perfect, and that for every condition likely to arise provision has been made.

BIGGEST AERO SHED.

At the same meeting bonds to the extent of $1,500 were ordered issued to cover the building of the shed at Mineola.

On March 31 the society listened to a most interesting and instructive illustrated address by Edward W. Smith of Germantown, Pa., on "Stability," and a humorous story by A. D. Lee on "An Aeroplane Flight in Arizona."

William J. Hammer delivered a lecture upon "Selenium and Its Industrial Application" on April 14. This was on similar lines to the one delivered recently before the Engineering Society of Stevens Institute. It was profusely illustrated by lantern slides, and types of selenium cells and other apparatus. Selenium is a by-product from the manufacture of sulphuric acid from iron pyrites, and when employed in the selenium cell is an absolute non-conductor of electricity in the dark, but becomes a conductor when light falls upon it. It was explained how the selenium cell may be employed in speaking over a beam of light, controlling electric and other motors and dynamos, transmitting pictures over wires, firing guns by a shaft of light, signaling to aeroplanes and balloons, etc.

The Aero Club of New England has voted to buy an aeroplane this summer and to hold an aviation meet. At the last banquet of the season, held April 4, the following committee was appointed to arrange for the purchase of the machine and likewise for the meet: Henry Howard, chairman of the aeroplane committee of the club; A. R. Shrigley, secretary of the club, and Dr. F. L. D. Rust. The only stipulation which the club made regarding the purchase of the aeroplane is that it must be capable of carrying two passengers.

Chairman Howard of the committee has just returned from a visit to the factory of the Wright Brothers at Dayton, O., where he was permitted to inspect the work being done there. He told the club about his meeting with the distinguished aviators and of his efforts to get them to give an exhibition in Boston the coming summer. Although they disclaimed any desire to commercialize aeroplaning, they refused to come, he said, unless $50,000 was guaranteed them.

In view of their disputes over patents with other inventors, the subject of aviation contests was broached. To these the Wrights did not object, said Mr. Howard, provided they were held not as a professional meet, but as an amateur event.

Among the speakers were Charles J. Glidden, W. Starling Burgess, A. M. Herring, Prof. Gaetano Lanza of Technology, Prof. William H. Pickering and Prof. A. L. Rotch of Harvard, Norman Prince, J. H. McAlman, James Means, J. Fortescue and A. A. Merrill.

Mr. Herring and Professor Pickering told of a number of experiments which they have been making with regard to producing equilibrium in aeroplanes.

The Aero Club of St. Louis has added about 100 members in the past month, principally from advertising circulars sent out to members of other clubs and automobile owners by Secretary Noel.

The Aero Club of St. Louis will conduct a free aeroplane exhibition, October 6 to 15, which will be followed, on October 17, by the international balloon race. No aviators have been engaged, so far, for the exhibition; but the club expects to have six or eight aeroplanes with successful operators.

The Aeronautic Experiment Association of St. Louis has 12 members whose machines will be completed before the middle of May, and nearly all will be ready about May 1. The association has now about 40 members and the roll increases at each of the bi-monthly meetings. The latter are well attended, 32 members being present at the last on March 30.

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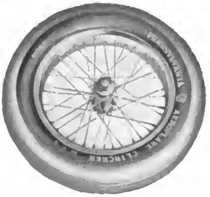

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26x2½ "	6½ "
28x2½ "	7½ "
28x3 "	8 "
28x3½ "	8½ "

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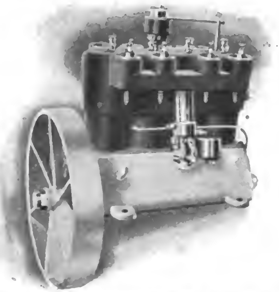

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Four cylinder 4½ x 4½ in. 30 to 40 H.P., complete with radiator and 6-ft. x 3½-ft.-pitch propeller, $650 Weight per outfit 175 lbs.

Four cylinder, 5 x 5 in., 40 to 50 H. P., complete with radiator and 7-ft. x 4-ft.-pitch propeller, $750 Wgt. per outfit 200 lbs.

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The Buyers' Guide

TO OUR FRIENDS.—We would appreciate it very much if you would specify in writing advertisers that you saw the ad. in AERONAUTICS. This will help us, and eventually be of equal service to yourselves.

PROGRESS AT THE WRIGHT PLANT.

The new woodworking equipment is now entirely installed in the commodious and extensive temporary buildings put up early in the year for the manufacture of the 1910 Wright machines. Both this shop and the machine shop are working with a full staff of trained men to meet the summer demand for machines. This is an especially hard task for the company, as its policy requires the manufacture in its own shops of every part of both the motor and the aeroplane, thus guaranteeing not only the best material, but the best workmanship. A number of machines are well nigh completed.

The training camp at Montgomery, Ala., has now been in operation for about a month, and there are quite a number of men there waiting their chance to learn to operate these machines. These men have been carefully selected from the best material obtainable, and it is the expectation that when the season really opens, many aviators more skilled than any that have ever flown in this country will appear with these Wright machines.

PENNSYLVANIA TIRES LARGE.

While the weight of Pennsylvania Rubber Co.'s aeroplane tires is slightly above that for the regulation bicycle tires, considerable is gained in the size. It is well known that large tires are most economical and easiest riding on automobiles, with an additional saving in the life of the motor. These tires come in sizes as follows: 20 x 4, 28 x 3 and 28 x 3½, weighing 6¼, 8 and 8¾ lbs. respectively. They are also made in 2½-in. size, diameters 26 and 28 in. All are of the clincher type. Wheels can also be supplied.

THE COFFIN PROPELLER.

Alonzo Coffin, 2902 19th St., San Francisco, claims that he has proven a propeller designed and built on lines to give a perfect parallel thrust will give the highest possible efficiency. A testing plant has been equipped to test propellers for any experimenter at a small fee.

Mr. Coffin has sold a goodly number of his own design propellers. He carries in stock those from 6 to 8 1/3 ft. diameter, 4½ to 8 ft. pitch. Special sizes are built to order.

CLEVELAND AEROPLANE CO.

The Cleveland Aeroplane Co., 356 The Arcade, Cleveland, O., are manufacturing scale models of the well-known machines. They also make an electrical display affair, consisting of an aeroplane suspended from a rotating beam propeller by dry cells.

NEW SUPPLY CATALOG.

The Aeronautic Supply Co. has issued the second edition of its catalog No. 1, compiled by E. Percy Noel. The company announces that about May 15 it will issue catalog No. 2, which will be as complete and accurate as it can be made.

The Aeronautic Supply Co. reports the sale of three Holmes seven-cylinder rotary motors and one Boulevard aeroplane motor.

NEW CURTISS MACHINE.

G. H. Curtiss expects to bring out a new passenger-carrying type machine about May 10. It will be a slower machine than all other Curtiss planes, having greater surface and more stability. It will seat two or three passengers comfortably.

W. C. P. HANDLES PROPELLERS.

The Wyckoff, Church & Partridge Co., New York agents for the Curtiss machine, are now handling the Requa-Gibson propeller.

DETROIT MOTOR.

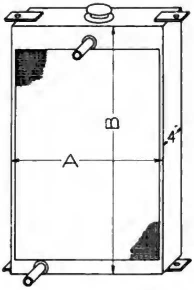
The Detroit Aeronautic Construction Co., which is putting out an aero motor, has been building the same type for marine purposes, some heavier, for years, under another name, and have been very successful with them.

Water-cooled cylinders are cast en bloc, which is the only way to get compactness so much sought after, with exhaust valves on one side and the intake manifold cast in cylinder wall on the opposite side, doing away with many joints which cause so much annoyance. No asbestos packing is used. The gases coming in on the opposite side of the exhaust will always have a tendency to thoroughly clean the cylinders. Aluminum caps cover the valve ports, which are especially large, giving easy access to valves should they nee. reseating. The crank case is of aluminum, carrying the crank shaft on two large Hess-Bright ball bearings; the crank is cut out of solid bar of high carbon steel; bearings are ground to size; a small gear pump forces at all times perfect lubrication to all bearings. Ignition is by a timer and high-tension magneto. A special light radiator of ample size is furnished with motor to take care of cooling system. An aluminum fan flywheel 22 in. in diameter helps to keep the motor cool. The company furnishes also different sizes of laminated spruce and white wood propellers, and radiators. The motors are all thoroughly tested before leaving factory, and in all cases develop more than their rated horsepower at 1,000 revolutions. In regard to compactness, the 30 to 40 h. p. motor is only 20 in. long over all and 18 in. high, weighing complete, with radiator and propeller connected, 175 lbs.

AERONAUTICAL RADIATORS.

The El Arco Radiator Co. are putting out a "featherweight" radiator in sizes for 30 to 90 h. p. motors, weighing but 16 lbs. for the first, and ranging up to 41 lbs. for the latter. There is also the "light weight" line, slightly heavier.

El Arco radiators have honeycomb square-cell tubes with wide vertical water passages, the tubes being spaced ½ apart on centres. The construction of El Arco tubes avoids the use of spacing strips to form the water passages, usual in square-cell radiators, the water spaces being formed by offsets in the metal of the tubes so that the edges of the tubes present the minimum of resistance to the air, and the tubes can therefore be assembled in the most compact manner possible. These radiators are tested under 15 lbs. air pressure, and are guaranteed against defects of workmanship and materials and against clogging up.



These radiators are guaranteed to cool motors of indicated horse powers when used in aeroplanes when in flight. Motors used in dirigibles should have radiators rated for motors of 50 per cent. greater horse power.

ELBRIDGE ENGINES USED BY MANY.

C. H. Urinson, of the Aero Club of Rochester, N. Y., has practically completed a biplane which embodies well established theories of construction as well as some ideas of his own regarding control

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and steering. He claims that it infringes upon no other ideas, patented or unpatented, and that his model and gliders have flown perfectly. Mr. Urmson has invented an engine as well, but will probably make his trials with an Elbridge motor of 25 h. p. G. H. Nichols, of the same club, is putting the last touches on a monoplane of entirely original design, to be equipped with an Elbridge engine.

John Seller, of Union Hill, N. J., is soon to make experimental flights with an aeroplane which he patented in July, 1909, the power for which will be derived from a 30-40 h. p. Elbridge motor which was ordered some time ago. The machine is an ingenious arrangement of small box planes, stayed and trussed according to the inventor's own ideas.

Fritz Russ, of Johnstown, Pa., has in course of construction an unusual departure from the orthodox design of biplanes or monoplanes in a semi-projectile shaped monoplane with interior propellers. The plane embodies a wind shield and an enclosed space for passengers. He has ordered a 40-60 h. p. Elbridge Featherweight special motor which will be muffled instead of exhausting through open ports.

George A. Metcalf, who is experimenting with helicopters at Malden, Mass., has received an Elbridge four-cylinder Featherweight motor for use in his trials.

One of the earliest aeroplane trials in the southern states will be made, it is reported, by A. F. W. McManus, of San Antonio, Texas, who will begin work as soon as he receives a three-cylinder Elbridge Featherweight, ordered for early delivery.

BUYERS' AGENT GOING ABROAD.

Ladis Lewkowicz left for France on April 14. Mr. Lewkowicz has for many years been a large manufacturer of flying toys, and he is now going into the aeronautic field in a larger way. Preliminary to entering the manufacturing of machines he intends to fly different makes of aeroplanes. He will also act as purchaser's agent in France for anything in the aero line which Americans may want. He will be glad to look up details of motors, machines or other supplies, and make any arrangements desired on behalf of his customers from this country. He may be addressed at Ervauville, Loiret, France.

PALMER TIRES.

The Palmer aeroplane tire is a notable accessory to meet the unique demands of aviation. It is a patented tire made exclusively by the B. F. Goodrich Co, Akron, Ohio.

The principle of Palmer construction, followed in the aeroplane tire, has kept a pre-eminent place in the field of light and durable tires. The greatest speed records in bicycle racing have been won on Palmer bicycle tires. In fact, there has been no competition in this line of equipment. Again, the Palmer sulky tire, for over 15 years, has been the standard required by the manufacturers and drivers of sulkies.

This very great popularity testifies to the reliable type of tire chosen for the unusual demands of the aeroplane. The Palmer construction is distinguished for its fast and easy riding qualities and by its lightness.

The Palmer aeroplane tire is about 25 per cent lighter than any of the single-tube tires of the same size and about 50 per cent lighter than double-tube tires. Every ounce of weight that will be a drawback to the efficient use of the plane is eliminated. There is no dead weight or holding back in getting away from the ground. The standard size of the tire is 20 by 2¼ in., and the weight is 2 lb. 5 oz.

The tire is built up of four plies woven so that the threads of one ply are at an angle of 45 deg. to those of another. Thus there is a seamless, endless, spiral tube, with each thread embedded separately in pure rubber. This substitution for interwoven fabric gives the Palmer aeroplane tire the greatest amount of buoyancy and resilience. In addition, an unusual quantity of pure rubber combines all the pieces closely so they will not separate, and prevents friction between the threads. This assures durability and long life.

In fact, the Palmer tire is not an experiment.

It has been the subject of very careful test.

It is the result of long experience and it has proved its reliability in actual use.

The Palmer tire is the regular equipment of the Herring-Curtiss planes with which Mr. Glenn H. Curtiss won the International Cup last summer at Rheims, France, and established further claim to the title at the January aviation meet at Los, Angeles, California.

The B. F. Goodrich Co. has made careful preparation so that it is able to make the tires according to the specifications of manufacturers and of individual aeronauts who are experimenting with their own planes.

NEW WHITEHEAD MOTOR.

Among the latest assets of the art is the new Whitehead motor, built by Gustav Whitehead, who is quite well known as a builder of special engines. A partnership has been formed with George A. Lawrence, a well-known aero enthusiast and experimenter. They have already delivered their first motor, one of 75 h. p., to C. & A. Wittemann. The Wittemann brothers have adopted the Whitehead motor exclusively and orders are now being put through for two more. This first motor is to be used on an aeroplane of their own design.

Messrs Whitehead and Lawrence are making two sizes, 40 and 75 h. p., the former weighing 145 lbs. and the other 200 lbs., including the four gasoline vaporizers, shaft coupling, timer, wiring and plugs. The motors develop their rated power at 1,000 r. p. m. but can readily be run at higher speed. Under most favorable conditions 55 and 87 b. h. p. respectively are promised.

A feature of this new 2-cycle engine is the absence of carbureter, all four cylinders being fed by individual injectors. Each cylinder has eight exhaust ports. Phosphor bearings are used in place of balls. Thrust bearing is located on inside of crank case.

THE NEW EISEMANN AUTOMATIC MAGNETO.

It has become customary in many instances to entirely dispense with means for varying the time of the spark. The ignition mechanism is set for a fixed spark—generally 17 deg. to 20 deg. advance—and ignition will always take place at the same time, whether the motor is running slowly or at its maximum speed. How faulty this system is and what disadvantages it entails is obvious without a very extended demonstration. The motor develops its maximum power only at 40 deg. to 48 deg. advance. In fact, a motor of medium size develops up to 6 h. p. more power with 45 deg. ignition advance than with 20 deg., and that without a corresponding increase in fuel consumption. The reason for this is that in the case of late ignition, combustion in the cylinder is completed only long after the dead center is passed, when the combustion space has been greatly enlarged by the downward motion of the piston, whereby the effect of the explosion is appreciably reduced. A portion of the combustible mixture therefore passes unused into the exhaust, so that the fuel is used in a very wasteful manner.

At slow speed ignition at 20 deg. advance is too early, and the explosive force of the gases is then expended on an upward moving piston. This results in unpleasant knocking of the motor and premature destruction of the bearings.

Others Attempt. *The*
GREENE
BIPLANE
Accomplishes

¶ Proven beyond doubt the easiest to drive, most stable and hardest to damage.

¶ The **Greene Biplane** holds several records, although not official.

¶ Two **Greene Biplanes** now making successful exhibition flights.

¶ We are working overtime filling orders for spring delivery. Order now for delivery by July 1st.

The Only Successful
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made in America that does not infringe any patents.

NOTE:—Every aeroplane that has left our factory has flown on the *first trial.* No readjusting or experimenting was necessary, proving that we have the only American aeroplane built on truly scientific lines.

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WHY AERONAUTS
PREFER

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It is—

(1) **FASTEST**—No dragging nor holding back in the running start from the ground.

(2) **LIGHTEST**—Standard size, 20x2¼ inches, weighs 2 pounds, 5 ounces, — No dead weight.

(3) **STRONGEST**—Has 4 plies of the remarkable Palmer Fabric, with a tough reinforced tread.

(4) **MOST RECEPTIVE**—Absorbs and holds in itself when alighting, the shocks and jars so destructive to the machinery and adjustment of the planes.

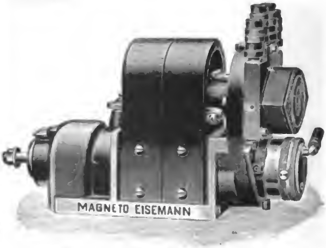
¶ Specifications invited from Aeroplane builders and dealers. A postal card will bring samples and prices by return mail.

Address: **Aeroplane Accessories Dept.**

The B. F. Goodrich Co.

AKRON ∴ ∴ OHIO

A further very serious disadvantage of fixed ignition is the fact that in starting the motor with 17 deg. to 20 deg. advance a back fire is almost unavoidable.



Eisemann Automatically Timing Magneto

The Eisemann Magneto Co. is this year placing upon the market a magneto whose armature shaft is provided with a small ball governor. The governor weights draw closer together or move apart, according to the speed of the motor, and in this manner effect the proper timing of the spark from the late ignition to maximum ignition advance. The arrangement is very well thought out, and the construction is considered highly successful in technical circles. Without entering into the manifold advantages, it may be here pointed out that with this timing arrangement the spark always occurs at the moment of the most advantageous position of the armature, so that the cranking of the motor is accomplished much easier than formerly, and exactly as strong a spark is produced at full retard as at full advance. As the timing of the ignition is varied in proportion to the speed of the motor and the spark always occurs at the most favorable time, the fuel is used to the very best advantage.

O'ROURKE BUYS CLEMENT-BAYARD MOTOR.

Mr. John F. O'Rourke, the President of the O'Rourke Engineering Construction Company, New York, has just purchased from the Bowman Automobile Company a 40 r. h. p. Clement-Bayard aviation motor for a biplane that he is constructing at the present time.

WANTED—Some party to finance the build- of a practical flying machine along new and improved lines. Best balancing device conceived. Good opportunity for right party. Immediate action necessary. Parties meaning business address undersigned.

H. S. WITTMAAK,
500 W. 213th St., New York City.

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WILL FLY ALL DAY

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M. B. SELLERS BUYS BATES MOTOR.

M. B. Sellers is to use a Bates motor in his further experiments. The new model four-cylinder water cooled motor weighs but 92 lbs., without accessories, or 138 lbs. with all, including magneto, radiator, carburetor, pumps and oil tank.

Exchange and Forum

AEROPLANES THAT ANYONE CAN FLY.

A letter has been received by *Aeronautics* from Ludwig Levi, representative of the Grade monoplane, in Germany, telling of some recent flights he has made with the Grade machine.

He says: "The handling of Grade's monoplane at any height and up to a wind of 12 miles is so easy that any boy or girl of 12 years can do it and learn in no time. Grade has now 37 monoplanes in the works, and some will be delivered in about 14 days.

DATA WANTED ON ELLIOTT, AMERICAN BALLOONIST.

Arthur V. White, 2 Earl Street, Toronto, Can., is anxious to locate any published descriptions of ascents made by a Mr. Elliott, an early American aeronaut. Especially are desired accounts of Baltimore ascents. Anyone having the slightest information is requested to communicate with Mr. White.

CAPITAL WANTED.

Dear Sir.—As soon as I can obtain financial assistance I am ready to bring out a new design machine that will fly twice as fast as any flyer yet. Less than half the head resistance, half the power usually required. Will not upset, as it adjusts itself automatically without man in. Total weight of 25 h. p. motor and machine 200 lbs., 250 sq. ft. surface, or 350 sq. ft. with weight 250 lbs. Has 24 points superiority over any other machine made to-day that can fly half as fast as this. Easy to control and safe in any wind.

ROBERT EMMITT.

261 W. 15th Street, New York.

HOW TO GLIDE.

105. It is not sufficient to run around the ground, but the machine must run down the side of a hill. If the wind is blowing about 15 miles per hour, the glider ought to glide down about 1 to 8 feet.

If the wind does not blow so hard, you might fly but you would have to go along the ground faster. If you were trying to fly against a wind of 15 miles per hour, you would have to go on the ground about 8 miles per hour. These are approximate figures, according to the shape of the surfaces.

The faster the apparatus travels through the air, the more weight it can carry. But it will carry 1 to 1½ lbs. per square foot when traveling at the rate of 15 miles per hour.

(Continued on page following)

FOR SALE—One 40 h. p. Curtiss aerial engine in good running order. Price $700. Address Box 188, Monett, Mo.

FOR SALE—New 75 h. p., 2-cycle motor, in perfect condition. Ready for delivery. $1,200. Address MOTOR, care AERONAUTICS.

NEW aeroplane for sale, without engine. Curtiss type. Flight guaranteed. Address AEROPLANE, care AERONAUTICS.

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All interested in the Art will be benefitted by becoming members.

DUES $10 PER ANNUM
NO INITIATION FEE

NO association in the world has accomplished as much.

If you desire to learn what the Society has done for the Art in the last eighteen months, send for the brochure just published reciting the accomplishments from the formation of the Society in July, 1908, to December, 1909. It is practically a history of aviation in the U. S. during the above period.

For the purpose of increasing the sphere of usefulness the membership should be augmented. Every additional member advances the general good.

¶ Address the Secretary for booklet and application blanks at P. O. Box 28, Station D, New York; or 1999 Broadway, where weekly meetings are held.

THE STRONGEST LIGHT METAL
McADAMITE
Specific Gravity 3 20
Tension, - 44,000 lbs. to sq. in. Compression, 126,000 lbs. to sq. in.
Transverse, 87,000 " " " " Torsion, - 60,000 " " " "
Send for test bar or a pattern for sample casting
U. S. McADAMITE METAL CO.
19 Rapelye Street BROOKLYN, N. Y.

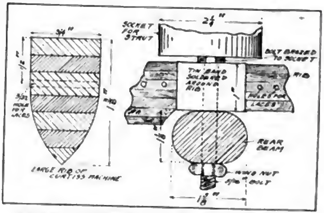
The Wright Company
DAYTON, OHIO
Sole makers of the famous
WRIGHT FLYERS
Both 'planes and motors built entirely in our own factory
THE WRIGHT COMPANY

HOLMES ROTARY MOTOR
GASOLINE
4 Cycle, 7 Cylinder, 30-35 H. P., Weighs 100 lbs.; 70-80 H.P., 160 lbs. Speed Range 500 to 2000 R. P. M.
Most effective motor of this type built in U. S. or any foreign country. Catalog and prices on application.
A. D. MACKAY, General Sales Agent
1139 First National Bank Building - Chicago, U.S.A.

The Wright Bros. have one glider containing 308 square feet, with a spread of 22 ft. 6 in. between surfaces. After several trials, moving the weight of the operator back each time, a flight of more than 300 ft. was made in a wind of 13 miles an hour, at an angle of descent of 10 degrees.

CURTISS RIBS AND STRUTS

106. Would like to know the sizes of the lateral beams and vertical struts and light and heavy ribs of Curtiss machine. Are ribs mortised on front lateral beam and do they lay flat on rear beam?



Answer. Struts are 1 in. thick at greatest width, by 2¼ fore and aft. The front edge is rounded with a ½-in. radius and tapers back to rear edge. See illustration p. 36, January, 1910, number. Under "Construction Aids" this number will be found diagram showing how ribs are fastened to both beams, with dimensions of beams and ribs. Herewith is sketch of large ribs with method of attachment to rear beams. The big ribs return to square section at the rear beam and taper off to ⅜ in. round at rear end. The silk laces through large rib. The top of the small ribs are level with the holes in the large ribs. Eyelets are inserted along the edge of the silk.

Ascensions

St. Louis, Mar. 13, 1910, James H. Bemis, pilot, S. J. Harbaugh, I. W. Lincoln and C. L. Robinson, in the St. Louis III., landing at Shuelline, Ill. Duration 1 hr. 20 mins.

St. Louis, Mar. 27, 1910, H. E. Honeywell, pilot, Wm. Assmann, J. P. Leonard and Walter Frich, in the St. Louis III., landing 3½ miles north of Edwardsville, Ill.

Alameda, Calif., April 2, 1910, Ivy Baldwin, pilot, and Robert W. Martland, in the Queen of the Pacific, landing near Tracy, Calif.

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The most RELIABLE, POWERFUL and PRACTICAL MOTOR yet produced in America

Our most recent productions are the ☛

60 H. P. Eight Cylinders, mounted "V" shape with a 90° relation to each other, and

30 H. P. Four Cylinders, mounted vertically on a common crank case.

¶ Our motors express the ultimate achievement in engine construction, fulfilling a degree of perfection which leaves nothing to be added or desired in the way of improvement, and the construction is so thorough and sincere throughout that the reliability, which aviators demand, is guaranteed as far as is humanly possible. :: :: ::

Favored exclusively by the experimenter in the science of flight, as it insures to him the maximum of safety

American Builders of the STANDARD VOISIN TYPE AEROPLANE
"THE ARISTOCRAT OF FLYING MACHINES"
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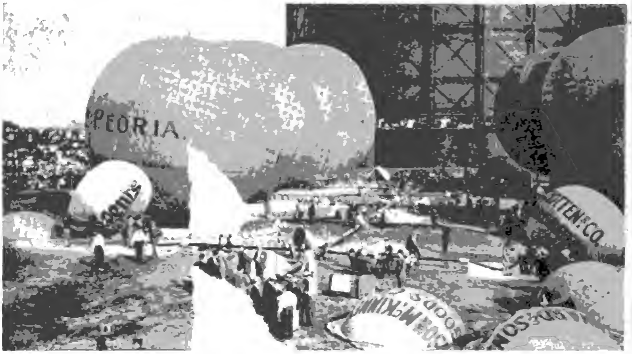
We Build Balloons That Win

HAVE WON EVERY CONTEST ENTERED AGAINST ALL MAKES

CHICAGO CONTEST — Balloon "Fielding-San Antonio" — 9 competitors
Distance and endurance trophies, also water record of the world—350 miles one trip
INDIANAPOLIS CONTEST — Balloon "University City" — 6 competitors
PEORIA CONTEST — Balloon "Peoria" — 3 competitors
ST. LOUIS CENTENNIAL CONTEST — Balloon "St. Louis III" first, and Balloon "Centennial" officially second for distance and endurance, 47 hrs., 41 min.—8 competitors
Balloon "St. Louis III"—speed record of America—Lambert, pilot; Von Phul, aide
JUST THINK OF IT, EVERY CONTEST IN THE LAST TWO YEARS.



Aero ounds, Centennial Contest, St. Louis, Mo.

¶ The longest voy ensed pilot in the United States, in 1908, was made with the 22 ter "Yankee"—461 miles with two stops—a remarkable performance; pounds ballast aboard when landing.

HONEYWELL, Builder

¶ The greatest balloon trip of 1908 and 1909—850 miles in competition—made by the 2000 cubic meter balloon, "Fielding-San Antonio." Four American and two F eign makes defeated by wide margin.

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¶ HONEYWELL CONSTRUCTION utilizes the latest and best materials—varnished or rubberized envelope with French-type valve, and Italian hemp or linen nettings. Cars equipped for comfort and convenience—light and durable. . . . .

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H. E. HONEYWELL, Director

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AERONAUTICS

THE AMERICAN MAGAZINE OF AERIAL LOCOMOTION

VOL. 6
NO. 6.

JUNE, 1910

25
CTS.

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More actual power for weight than any other engines in the world!
Only engines with unlimited guarantee based on actual performance!

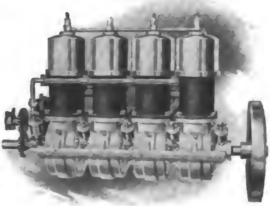
Less bulk for the power than any other engines in the world!

Fewer parts (Working or otherwise) than any other engine in the world!

Guaranteed speed range 200 r. p. m. to 2200 r. p. m.

Extra large bearings, —more than 15 in. in 4 cylinder engines.

A refinement of detail only possible in a light weight engine that has actually been on the market more than four years.



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Also made in 2 cyl. 20 h. p.; 3 cyl. 30 h. p.; 6 cyl. 60 h. p.
Air-cooled engines, 1 to 4 cyl. 5-20 h. p. at 1,000.

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—Monte Cristo

ALEXANDER THE GREAT wept because he had no more worlds to conquer. Fichtel & Sachs, the great modern friction fighters, are in the same position, but are not weeping, being delighted at the remaining opportunities on the Planet Mars and Halley's Comet, and "sailing in search of some new continent—for lands not yet laid down in any chart."

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F & S

Annular Ball Bearings

(Made in Germany)

were used by M. PAULHAN in his seven-cylinder revolving Gnome motor, and every revolving part of his Farman aeroplane in his $50,000 flight of 186 miles from London to Manchester.

Oldfield and Hemery used **F & S** Annular Ball Bearings on the Benz car in their terra firma world's records. Every European power uses **F & S** Annular Ball Bearings in their submarines, and at the International Motor Boat Regatta at Monte Carlo, Monaco, the winning motor boats were fitted with **F & S** Annular Ball Bearings.

The Heavens, the Earth, the Oceans, and the Deep Sea, all declare the **F & S** Annular Ball Bearing Supremacy.

J. S. BRETZ COMPANY, Sole Importers

Times Building, New York

Aeronautics

Can a Man Fly With Wings?

By H. La V. Twining

PRESIDENT AERO CLUB OF CALIFORNIA; HEAD OF PHYSICS AND ELECTRICAL ENGINEERING IN THE LOS ANGELES POLYTECHNIC HIGH SCHOOL; AUTHOR OF "WIRELESS TELEGRAPHY," ETC.

EDITOR'S NOTE:—*Mr. Twining believes that he can fly with manually operated wings, and, in the following article, gives the results of his experiments and observations in bird flight up to date, with a full-size machine.*

In the light of our present knowledge the contents are startling, but are backed by figures and results that seem to encourage further investigation.

IN the light of our present knowledge, the answer to the above question seems obvious. When it requires at least 25 horse power to fly a one-man-carrying machine, weighing at least 600 to 700 pounds, and when one considers the spread of canvas and the speed at which the machine must be driven, in order to develop reaction enough to furnish support, it does seem utterly unreasonable to suppose that beating wings can be used for mechanical flight, especially, if they be manually operated. Thus, viewed from the standpoint of the present development of the aeroplane, flight with wings is an impossibility, even though the wings be used for propulsion only.

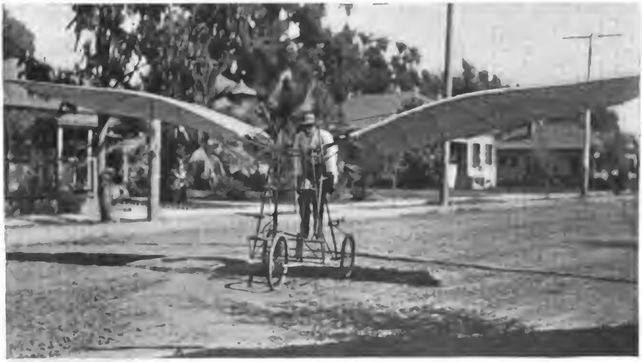
It is a good thing for the world that there are men who refuse to follow the beaten path. They are more often wrong than right, but amongst these dreamers there develops a man, sometimes, that makes the dream a reality, provided the thing is not an impossibility.

Subtract ten years from the calendar. We find scientific men, business men, and people generally entertaining the idea that flight for man could never be realized, but now we see how incorrectly they reasoned.

Flight with wings may or may not be possible, but men are reasoning incorrectly in regard to it, because they are reasoning from insufficient data.

In this article I propose to call attention to a few points that have a very important bearing upon the subject.

The old saying that weight increases by the cube, and the surface by the square is true, provided that the dimensions of a mass or a surface be increased. Thus, if we double the edge of a cube, its surface is four times as great, and its mass is eight times as large. Hence, doubling the edge of the cube increases, its surface by the square, and its mass or volume by the cube. This reasoning applied to weight and wing area in birds seems conclu-



Prof. Twining's Ornithopter

sive, but if we examine it in the light of our present knowledge, it is seen to be utterly fallacious.

A turkey weighing 10 lbs. has a wing area of 3 sq. ft., the figures being taken from a turkey formerly in my possession. This turkey could spring off the ground, fly over a 2-story barn, and sail away for 60 rods without a wing beat, with perfect ease. An average man weighs 150 lbs. Applying the above law, we have:

$10^3:150^3::3^2:X^2$. Solving for X, we have 180 sq. ft. about. In the case of the sea gull, we have the following data: weight 2¼ lbs., wing area 1½ sq ft. Hence: $2.25^3:150^3::1.5^2:X^2$ whence $X = 816$ sq. ft. necessary to carry a man weighing 150 lbs. These results are utterly ridiculous in the light of recent achievements. The Bleriot cross channel machine weighs in the neighborhood of 650 to 750 lbs., having only 155 sq. ft. The Santos Dumont machine weighs 240 lbs. and it has a surface of 120 sq. ft. To the above weights must be added the weight of the operator. The same law applied to the Bleriot, and Dumont machines, taking the turkey as basis, would give each 2,460 sq. ft. and 725 sq. ft., respectively, the weight of the aviator being included in the calculation. In dealing with weight and wing area, we are dealing practically with linear relations. For instance, 2 lbs. are twice 1 lb. Three pounds are three times 1 lb., etc. Two square feet are twice 1 sq. ft. and 3 sq. ft. are three times 1 sq. ft. without any regard as to the linear dimensions. We might say that if 1 sq. ft. will support 1 lb., then 2 sq. ft. will support 2 lbs.

Applying the last law to the Bleriot machine we have, $10:850::3:X$. Solving for X, we have 255 sq. ft. which is still in excess of the amount actually required. For the Dumont machine it is 117 sq. ft. as against 120 sq. ft. actually used. These figures include the weight of the aviator as 150 lbs. When it is remembered that these machines can carry additional weight and that many birds have a less proportion of wing area to weight than the turkey mentioned, it is readily seen that even the linear law does not hold good, although it comes very near to actual results obtained by experiment.

In fact, there are various factors that enter into the problem, and it is next to useless to apply mathematical reasoning to a problem of this kind unless all the factors are taken into consideration.

The factors entering into bird flight are partially as follows: Weight, inertia, length of wing, breadth of wing, speed with which the wing is driven, mechanical leverages in the machine and the relationship of the various parts of the machine; as to the bird itself. As to the air; we must consider its inertia, its elasticity, its viscosity, pressures set up in it when disturbed, air currents, etc. Besides, we must know how the wing disturbs the air in order to know how the air reacts on the machine.

Some of these factors have been determined, and our knowledge now enables us to say that the reaction upon a beating wing is proportional to the square of its length, to its width, and to the square of its speed. Neglecting other factors for the present: doubling the length of the wing gives four times the effect; doubling the speed gives four times the effect; doubling the speed and the length both gives 16 times the effect, and doubling speed, length and width, gives 32 times the effect. If we double the weight at the same time, we find that the weight is only twice as great while the reactions become 32 times as effective.

It would not do, however, to draw conclusions from this reasoning. There are other factors. The relation of power to these factors is exceedingly important. If we get 32 times the reaction we must have 32 times the power, and doubling the weight would not permit of 32 times the power. On the other hand since we have 32 times the reaction we can do more than double the weight. We can take 32 times the weight and 32 times the power and only double the length, breadth and speed, provided the power does not increase faster than these other factors.

The question of power involves the question of waste or efficiency, and other factors that can only be determined by experiment, and it is useless to attempt a mathematical analysis of it, in the case of the wing, without further experimental data. The problem is thus seen to be an extremely complicated one and no man can safely say that manually operated wings are an impossibility.

Man in doing the world's work always takes leverages, and nature generally does the same thing. This typewriter that I am using has a multitude of levers by means of which I can utilize certain motions of the fingers to the best advantage, to do this writing. This is an example of man's application of levers to achieve a definite object.

My arms are a combination of levers as are the fingers also. This is an example of nature's application of levers to do its work.

The bird is a machine also built by combining a number of levers for the accomplishment of a definite purpose. In the study of the bird machine, men have given the most attention to the shape of the wings, the shape of the feathers, and their flexibility, which they thought had everything to do with the mystery of soaring and flying; and in so doing they have failed utterly to study the machine as a whole.

One might as well take a wheel off an automobile and make a learned and scientific study of it, in order to find out how the machine could run without having a horse attached to it. The study of the wing is all right, but it is not the only thing to be studied.

(To be continued)

Scientific American Trophy.

The 1910 rules of competition for the S. A. trophy provide that the cup be awarded to the contestant making the longest cross-country flight during the year. The distance covered must be at least 40 miles as the crow flies, or to a point 20 miles distant, returning to the point of departure.

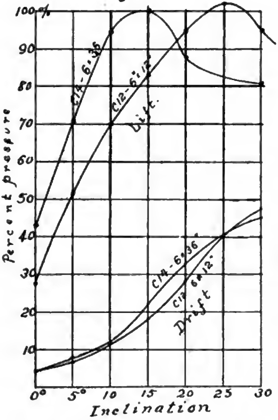
Notes on Aspect Ratio

By M. B. Sellers.

IT has long been known that the relative dimensions of an aeroplane surface affect the dynamic air pressure on it, and the object of this note is to compare the values obtained by M. Eiffel using a 6 in. x 36 in. surface, with those found by the writer employing a 6 in. x 12 in. surface. Calling the length of the aeroplane across the current divided by its width the Aspect Ratio, it has been found in the case of plane surfaces that the larger the aspect ratio, within certain limits, the sooner the lift reaches its maximum and the higher the normal pressure and lift values will be for any small angle. The same should be true for arched surfaces.

The surface used by M. Eiffel was 6 in. x 36 in. with a circular curvature of about 1 in 14*; and my nearest curvature to that was 1 in 12.† In the accompanying table I give the lift, drift and centre of pressure of these surfaces; the values given by M. Eiffel being reduced to percentage of the pressure on a normal plane to correspond with my own values, and the centre of pressure given in per cent. of the width, from the front edge.

Fig. 1



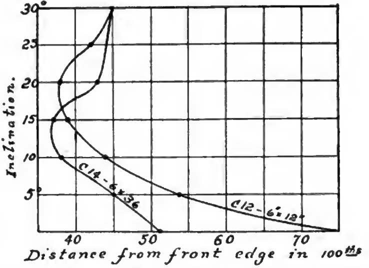
The lift and drift are plotted in Fig. 1. It is seen that the 6 in. x 36 in. shape gives higher values for small angles, and reaches its maximum lift at about 14 deg. The maximum lift for the 6 in. x 12 in. is at 25 deg. The drift curves differ correspondingly. Fig. 2 shows the centres of pressure plotted on inclination. The maximum forward position for the 6 in. x 36 in. shape is reached at about 14 deg., while for the 6 in. x 12 in. it is 20 deg.

The lift ratio is greater for the longer surface, showing it to be more efficient. It is not assumed that the difference in these values is wholly due to aspect ratio; it is in part due to experimental errors, difference of curvature, and difference in experimental conditions; but the difference due to these causes may be small in comparison. Anyhow, I hope this may suggest further study of the subject.

† See "Scientific American" Supp. No. 1715.
* See "Aerophile," Feb. 1, 1910.

	6" x 36"—1 in 14			6" x 12"—1 in 12		
	Lift	Drift	C. of P.	Lift	Drift	C. of P.
0......	43	4.5	51	27.5	4.7	75
5......	71	7.9	45	51.9	6.9	54
10......	95	11.8	38	70	11.4	44
15......	100	22.4	37	83	18.1	39
20......	88	33	43	95	28.1	38
25......	..	...	..	102.5	40.4	42
30......	81	45	45	95	47.5	45

Centre of pressure *Fig. 2.*



Carl G. Fisher, head of the Indianapolis Motor Speedway and president of the Prest-O-Lite Co., is having two aeroplanes built.

McNair Brothers, of Peoria, Ill., are working on a bird-type machine, raising the wings by an edgewise gliding motion in the air so that it is always incumbent on the air while in the act of raising for its next stroke downward.

Dr. and Mrs. Alexander Graham Bell left New York May 9 for a trip around Montreal, where they joined Mr. and Mrs. F. W. Baldwin for an indefinitely long tour of the world.

Hudson Maxim

President of The Aeronautical Society

INSEPARABLY connected with the higher development of explosives is the name Hudson Maxim. His epoch-making inventions have fairly revolutionized naval warfare.

Hudson Maxim was the fourth son of a family of eight children—six boys and two girls. He was born February 3, 1853, at Orneville, Piscataquis County, Maine. His parents, Isaac and Harriet Boston (Stevens) Maxim, were of sturdy New England stock of English and French Huguenot descent.

In 1875 he formulated the hypothesis of the compound nature of the so-called atoms, which has only recently been generally accepted as a proven theory through experiments on radiant matter. His theory was published in the "Scientific American" Supplement in 1889—which, in brief, is that all matter is one in the ultimate, and that the difference in the various forms of matter and manifestations of force is due to the difference in the relative positions of the ultimate atoms.

From 1883 to 1888 Mr. Maxim was engaged in the subscription book publishing business at Pittsfield, Mass., and during this period he wrote and published a book on Penmanship and Drawing, of which nearly half a million copies were sold by subscription. In 1888 he left the publishing business for the more fascinating occupation of inventing and experimenting with ordnance and explosives. Two years later he erected a dynamite and smokeless powder mill at Maxim, New Jersey, named for him, where he developed and manufactured the first smokeless powder to be adopted by the United States government. He soon sold out his inventions and powder business to E. I. Du Pont de Nemours & Company, of Wilmington, Delaware, and later was engaged by that firm as consulting engineer and expert in the experimental department.

He has recently developed and perfected a new smokeless powder, known as stabillite, which possesses decided advantages over any other form of this explosive.

Among the other notable inventions of Mr. Maxim is a detonating fuse for high-explosive projectiles, which has proven itself superior to all rival fuses.

The process of making calcium carbide continuously by the electrical resistance of a molten carbide conductor, removing the carbide as fast as formed and simultaneously supplying fresh material to the heating field, now in general use in this country, was invented by him, the invention being sold to the Union Carbide Company in 1906. During Mr. Maxim's experiments in the manufacture of calcium carbide, he invented a process for the manufacture of microscopic diamonds by electro-deposition.

Mr. Maxim's most recent war invention is a new type of torpedo-boat, which itself forms a veritable torpedo, so constructed as to be able to run through the gun-fire of a battleship without being stopped or receiving serious injury. This boat-torpedo will carry a ton of high explosive in its warhead, which will be delivered and exploded against the hull of the war vessel attacked by it.

Mr. Maxim has lately invented a new food product, which possesses unusual advantages as an army ration, besides being well adapted to general use.

A recent invention of his is the one of which he is the most proud. It is a game of skill, and an improvement on chess, and is called the War Game, the movements of the pieces simulating field operations of troops in battle.

Mr. Maxim has for the last nine years been at work writing a book on "The Science of Poetry and the Philosophy of Language," which is now completed, and will be published at an early date.

From the foregoing one can easily appreciate what a hard worker and tireless thinker this man must be, and yet, aside from inventive labors, he has won acknowledgment as writer, critic, philosopher and sociologist. He is an able public speaker, and is also a frequent contributor to the leading periodicals on a wide range of subjects.

Mr. Maxim is a member of the following societies: The Military Service Institution, Society of Chemical Industry, American Association for the Advancement of Science, Chemists' Club, New England Society, Navy League, the Brooklyn Institute of Arts and Sciences, and the Aeronautical Society.

The Thomas :: Biplane ::

WILLIAM T. THOMAS, of Hammondsport, N. Y., has finished a promising looking biplane for entry in contests during the year, though if there seems to be a demand he will contract to supply them. The builder has kindly furnished the following details:

DESCRIPTION OF THOMAS BIPLANE.

General.—"In the design of the machine automatic stability has been the key word, and the principles which underlie this have been brought in as far as has been deemed expedient. Thus, with this machine, assumed to be flying in still air, provided that all controls except the elevator were not operated, and that this elevator was merely held in its normal position, its tendency would be to keep on an even keel both laterally and also in the line of motion, and if it were thrown out of balance in any way, its tendency would be to right itself rather than continuing to get more out of control.

"This is accounted for by the disposition of the planes relative to the centre of gravity, and partly by the effect of the side planes in the outer sections of the main planes and in the tail. It will be noticed that a dihedral effect is obtained both in a fore and aft direction, due to the line joining the centres of pressure of the control surfaces passing well above the centre of gravity of the machine, and in a longitudinal direction, due to the dihedral tips and also due to the centre of gravity being below the centre of pressure in this plane.

Main Planes.—"These measure 27 ft. x 4 ft. 8 in., and are of the usual type, with modifications in regard to the fastening of the ribs and posts, over all length, including dihedral tips, is 32 ft. 6 in.

"The dihedral tips are pivoted about an axis in the line of motion of the machine, and are set normally at an angle of 30 deg. to the main planes. In case of emergency, these planes can be tilted so as to bring one horizontal while the other is very nearly vertical, so as to obtain a considerable lift on the former, or vice versa. It is, however, unnecessary to use these under most conditions due to the stabilizing effect of the side planes, four of which are used in the main planes, the end ones passing through the dihedral tips, and thus tending to shield the inner portion of the tip in the case of a side gust, which gust would also tend to swing the tail round, and head the machine into the wind, which is as desired."

Controls.—A biplane front control is used, placed well ahead of the main planes and high up, this being operated by a push and pull of the steering wheel, through stout steel cables. This control measures 7½ ft. x 2 ft.

A rear box control is used, being also of ptygoid aspect, measuring 5½ ft. x 3½ ft., planes 3½ ft. apart. This has side planes fitted, and is attached to the rear control bamboos in such a way that its angle of incidence can be varied, and set in different positions previous to a flight.

A rudder measuring 3 ft. 8 in. x 4 ft. long is pivoted over the top plane of the rear control, the lower half swinging in the box as shown by the drawing. This is operated by turning the steering wheel in the orthodox way.

Skids are provided under the rear control to protect it and aid in alighting.

Running Gear.—This consists of four 20 in. wheels mounted on springs of a particular shape (see drawing). These springs are attached to the skids, the wheels running between the skids, which latter are very rigidly braced to the frame of the machine, and are also connected directly to the engine bed by stout struts. These springs are very effective, and will not only take off much of the racking and straining of the guy wires due to the vibration caused by a rigid machine running over rough ground, but will also help in alighting, the wheels being pushed up and the skids coming into effect in the case of a heavy landing.

Propulsion.—A 7½ ft. propeller is driven by the 30 h. p. engine, through a chain and sprockets, giving a reduction of 1½—1, the propeller running at 1,000 r. p. m. when a 5 ft. pitch is used, and by lowering the gear so as to give different propeller speeds down to 600 r. p. m., different propellers of varying diameters and pitches will be tried.

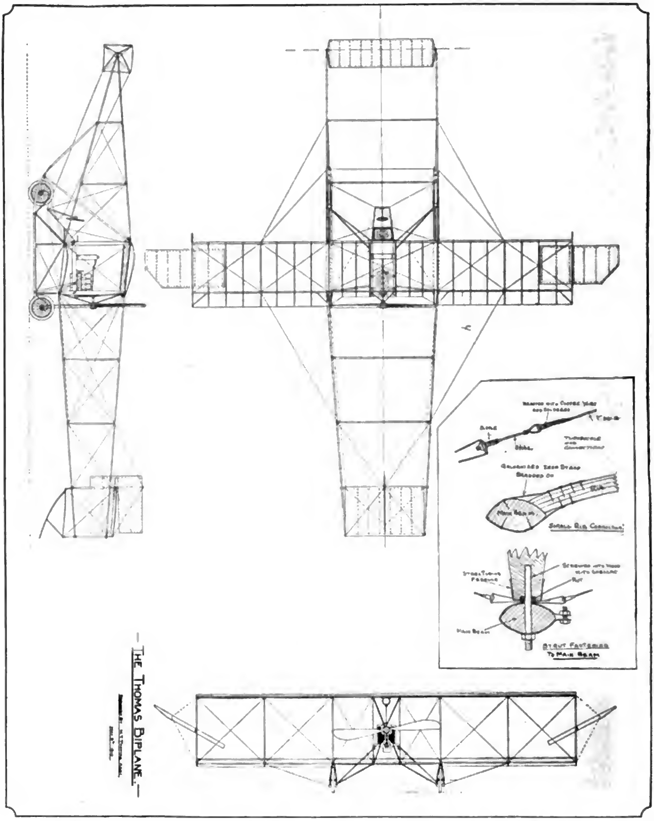
The torque due to the propeller will be allowed for by having some 4 sq. ft. more area on the right wings.

Detail.—All operating cables will be run through brass tubes at points where a turn is required, these tubes being well greased. This is believed by the designer to be more reliable than pulleys, which unless very carefully designed and made are apt to give trouble.

All struts are finished to a section of minimum head resistance, and all beams are enclosed in silk wherever possible. Baldwin's double rubberized silk is used throughout.

The sketches show various detail of construction which are believed to be novel and practical.

The total weight of machine is 600 lbs. without gasolene, the 6 gallons capacity adding roughly 48 lbs. to this.



Challenge From the Juniors.

THE Junior Aero Club of America challenges any aero club, society or association in the United States to fly an aeroplane model the greatest distance under the rules of the National Model Aero Club.

The challenge cup is, in fact, two cups, of silver, exactly alike in every particular in order to avoid unpleasant comments while boys and girls are competing with men and women for the same honors at the same time and place.

The cup is donated by Edward Durant, director of the Junior Aero Club of America, who is the son of the First American Aeronaut.

While competing for the Edward Durant trophy under the National Model Aero Club rules, the contestants are also competing for the excellent silver cup of special design donated by A. Leo Stevens, which is for the person (man, woman, boy or girl) whose model flies the greatest distance during the year 1910.

It is not to be forgotten that the members of the Junior Aero Club of America are ahead in all official flights held so far this year, but the interest in this new scientific sport is so rapidly increasing that it is difficult to predict who will be in the ascendancy at the next local test.

EDWARD DURANT, *Director,*
Junior Aero Club of America.

Google

Flying and :: Humidity ::

By Charles F. Willard.

MANY questions arise from time to time regarding high flying and some experiences of late open up a new line of thought.

Sometimes it seems—and is—very hard to reach any altitude at all. At other times it is comparatively easy. This change is from hour to hour. After being puzzled for a long time I can now mention some possible answers to the question of "Why so?"

Humidity seems to have a great deal more to do with the subject than has been credited to it. Since the close of the Los Angeles meet I have gone over some records made by a recording hydrometer and find that the variation in per cent. of humidity was very great at times, while practically nothing at other times. A change from 80 per cent. to 30 per cent., and back to 85, all took place within less than two hours.

Leaving Los Angeles and going to Fresno, Calif., considerable difficulty was experienced, especially in the afternoon. The altitude at Fresno was only 288 ft. The barometer pressure averaged 29.62 in. for February. The humidity was 81 per cent mornings and 34 per cent. in the afternoon.

At Phoenix, Ariz., the altitude was 1,087 ft., barometer for February 28.84 in., humidity 45 per cent. mornings and 18 per cent. afternoons.

Now, 0.78 in. difference in barometer pressure should not make any difference but it was the extreme hard work at Phoenix that led me to look into matters. For example, I took my machine—a new one—and tested it out one morning in several flights with a result that was apparently O. K. for the afternoon, but at 2:30 p. m. I had a smashup, due to no other reason than that the machine just dropped squarely and there was not enough space left to check the machine in so it hit the ground. That particular day was very warm and hence there, the humidity was very low in the afternoon.

Hamilton was able to fly at Phoenix with some 30 sq. ft. less surface on his machine [due to a fire], and he reached an altitude of some 300 ft., while at El Paso he found it convenient to add some 45 sq. ft. more surface.

At El Paso, Tex., the 8-cylinder Rheims machine had all it could do to carry Hamilton, whereas it has carried two good sized men many times. El Paso is 3,702 ft. high, humidity 36 per cent. mornings, and 13 per cent. afternoons.

At Phoenix 400 ft., estimated, was as high as I could get, which is far below the possibility at sea level, meaning that 1,087 and 400, or 1,487 ft., could more than be reached at sea level.

While there is nothing very decisive about this in one way, it surely seems that humidity is quite a factor in the altitude question. I have some readings of places I expect to go to soon and will try to substantiate these evidences.

Aeronautics :: in Mexico ::

By E. L. Ramsey.

A YOUNG Mexican by the name of Alexander Morales has been working on means for stability and believes he has succeeded in obtaining the desired result. He says:

"The principal parts which tend to give complete stability to my monoplane are two: One in the form of small planes which are attached over and at the ends of the main planes or wings, and the other an automatic spring which warps the wings or planes, a great assistance in changing direction, in the way that birds raise and close their wings to obtain perfect equilibrium in any position, as might happen with the monoplane in case of being turned from its course by air currents."

It was the intention to have an aeronautical tournament in Mexico City during the centennial celebration in September, but the idea has been abandoned on account of the difficulties met by Mr. Braniff in his Voisin biplane and Mr. Raoul Duval in his Bleriot monoplane. Both succeeded in getting up about 17 ft., and made very short and unsuccessful flights on account of the high altitude.

A new type of monoplane has been designed by a young man in Guadalajara, a working model having been built which has flown satisfactorily. The main supporting planes are covered with "manta" (common sheeting) varnished over. Money is being raised by popular subscription to enable the young man to build a man-carrying machine.

An actor named Manuel Noriega is experimenting with a model aeroplane of his own construction in Veracruz, V. C., Mexico, and it is reported his efforts have been quite a success.

Sr. Alfonso Saavedra, who has been experimenting with a monoplane of his own construction, modeled after the Bleriot machine, tried his machine near the beach, but presumably on account of the strong breeze blowing, same was dashed to the ground and completely wrecked.

The Aviation :: :: World :: ::

THE SAN ANTONIO MEET.

THE aviation meet at San Antonio April 20 to 25 was scheduled as the main feature of the Spring Carnival there, which included parades, celebrations, etc., as minor features. Two exhibitions daily, morning and afternoon, were scheduled.

The following aviators participated in the meet: Glenn H. Curtiss, with his 8-cylinder Curtiss; Charles K. Hamilton, with another 8-cylinder Curtiss; Charles F. Willard and J. C. Mars, with 4-cylinder Curtiss machines.

Capt. Thos. S. Baldwin was on hand with his aeroplane and a duplicate of the U. S. Army dirigible, equipped with Curtiss motor. The biplane, illustrated in the May issue, was also equipped with Curtiss motor and made in the Curtiss shops at Hammondsport. It presented several novel features well worthy of attention, such as the engine setting as low as the level of the lower surface; sprocket and chain to counter shaft carrying propeller.

The meet was to have been held at the Fair Grounds in San Antonio, but, after looking over the race track there, Mr. Curtiss immediately saw the utter impossibility of flying in such a circumscribed space. It might be mentioned here that Mr. Curtiss has come to the conclusion not to fly hereafter unless suitable grounds are provided, the accident to J. C. Mars at Memphis having brought home what was already known—that a large open space was not a convenience only, but a necessity for the safety of the spectators as well as that of the aviators themselves.

New grounds were selected at Highland Park and a grandstand and other necessary buildings erected.

The first day of flights was April 20. An invitation had been issued to the school children to attend and a special rate made them. The children came in large numbers as well as their elders.

The meet opened favorably, the weather being fair although somewhat windy, but not enough to seriously interfere with the flights.

The following flights for the day were made: Curtiss circles the course several times. Chas. K. Hamilton, as is his custom, rose quickly from the ground and, flying higher than Curtiss, circled the course and then flew out of the course over the surrounding houses. On his return he made his well-known glide in front of the grandstand.

From the roofs of buildings in San Antonio the machines were plainly visible at Highland Park, about three miles away.

Mars did not fly, as his machine was not yet fully repaired and he had hardly recovered from his shaking up at Memphis, and Willard circled the track once but broke his propeller.

Capt. Baldwin circled the enclosure several times, starting, stopping and steering in every direction.

The next day, April 21, was windy, the wind coming in strong, irregular puffs. It was hoped that it would let up enough to permit flights, but it blew with unceasing vigor. Hamilton tried two flights, but gave up. The crowd, a very small one, was given wind checks.

The same conditions prevailed Friday—the wind being too strong to permit safe flying, especially as it came in gusts. Hamilton flew for 10 minutes to save the crowd disappointment. At no time on this day were there more than 200 people present.

NEW WORLD RECORD.

On Saturday, the 23d, Curtiss made a new quick-start record before about 2,500 spectators. The time was 5 1/5 seconds, but he did not lessen his short distance record. In the morning both Curtiss and Hamilton were in the air at the same time for about eight minutes, Hamilton repeating his spectacular glides with the motor shut off. R. W. Hearne, one of the promoters, was given a short ride. In the afternoon was present the greatest crowd of the meeting. Curtiss, Hamilton, Willard and Mars all made flights, but Mars and Willard found the wind too much for their low-powered machines, and the interest centered around Curtiss and Hamilton. Lieut. B. D. Foulois, of the U. S. Signal Corps, was carried as a passenger with Curtiss, as were several others.

It was hoped that Sunday would be a favorable day and make up for the days which had been lost, but the same strong, gusty wind prevailed.

A large number of people journeyed out to the grounds in spite of the wind, and these were admitted free to inspect the machines, about which there was the greatest curiosity. They wandered about, and asked innumerable questions of the mechanicians.

CARRY PASSENGERS ON TAIL?

The most common seemed to be, "Where does the operator sit?"; next, "Where does he put his feet?", "Where does he put his hands?" One old lady, on being told that the machine carried one passenger, replied, "You must be mistaken. Why," pointing to the horizontal surface of the rear control, "there is room enough for four people at least on that." The idea of carrying four passengers on the tail was too much for the mechanician and he could only look helplessly at his questioner.

TWO NEW WORLD RECORDS.

On Sunday afternoon Hamilton was the only one to fly in the strong wind and he did not attempt to fly around the field. Three trials were made for short time and short-distance starts in the face of the strong wind.

The second trial got the quick-time start down to 3.8 seconds, while on the third start he clipped 28 ft. from Curtiss' Los Angeles record, getting off in 70 ft.

Owing to the bad weather, the meet was extended over Monday. On this day all made flights. In the afternoon Curtiss and Hamilton were flying at once, one above the other, going in the same direction and at the same speed. Hamilton operated the Baldwin aeroplane, but met with little success. Captain Baldwin himself sailed the dirigible several times over the field. Again on this day there was a small crowd.

The W. B. Kelley cup was given to Curtiss for first breaking records at the meet. Hamilton got the L. P. Peck cup for the best and most daring flights.

The meet was conducted at a big loss and the citizens arranging it were called upon to make good a guarantee of $8,000 to the aviators.

OTHER FLIGHTS OF CURTISS MACHINES.

Whipple Hall, in a Curtiss machine, made some flights at Fresno, Cal., under the auspices of the Driving Club and also the Union High School League. Hall's machine has had the surface increased.

Hamilton made some good flights at Beaumont, Tex., on April 27-28 before large and highly enthusiastic crowds.

Eugene Ely, who bought the Curtiss aeroplane owned by E. Henry Wemme, the Curtiss Portland (Ore.) agent, made his first flight at Portland on April 27.

The machine bought by A. P. Warner has been sold to Joseph Seymour, the auto race driver, for exhibitions.

FLYING AT ATLANTA.

Grand Opera, Aviation and Automobile Races were on the schedule the first week in May at Atlanta, Ga. Hamilton, after a preliminary test flight on May 1st, began official flights on the 2nd when eight good flights were made on the Speedway course on three of which a passenger was carried. Thousands of people assembled showed great enthusiasm.

On a trial flight at Hanford, Cal., Frank Johnson broke his Curtiss machine and the promised show could not be given.

Alexandria, Va., May 14.—Charles F. Willard made a fine cross country flight of about 12½ miles and return in a drizzling rain. Willard is touring Louisiana and Mississippi for the next few weeks.

Crosby Flying.

R W. Crosby, who bought a Greene aeroplane, gave his first exhibition at Sacramento, Cal., on April 17, but was able to make only two brief flights.

Flights of Herring-Burgess Machine.

As a result of the flights that have been made with the two Herring-Burgess machines so far tried out, a few modifications will be made, principally looking to the better protection of the ends of the wings and to altering the controlling mechanism so that the engine levers can be operated without taking the hands from the steering and balancing controls. A more direct system for lateral stability has also been suggested and will probably be adopted. Meanwhile, other machines of the same general type are nearing completion in the Burgess shops. It is understood that the manufacture of the "Flying Fish," as the machine is called, is soon to be put upon a more extensive basis to meet the many orders that have already been received and those which are expected in the course of the present season.

Trials were made of the second machine from April 17 to 22 on the Plum Island grounds. It will be remembered the first machine had its trial at Chebacco Lake in February and was immediately shipped to the purchaser in Kansas where the engine was run with no load or propeller which resulted in its damage. Throughout these tests at Plum Island the elevation was controlled exclusively by the forward horizontal rudder, which was operated by means of a vertical lever worked fore and aft by the right hand. The lateral stability was primarily controlled by the eight vertical fins raised above the upper plane of the flyer. These were reinforced by the action of the vertical rudder operating on the principle that by turning the machine towards the right, the left end of the supporting surface is made to travel faster than the right end, the left end thereby gaining increased lifting power and bringing the machine back to a level position if it had previously tilted downward to the left. The vertical rudder was controlled by a horizontal steering wheel attached to the under side of a longitudinal bar conveniently located for manipulation by the left hand. Mounted on the same bar which also served as a rest for the left arm was the vertical throttle lever. The throttle lever was connected with the short-circuiting device of the magneto in such a manner that the lever itself short circuited the magneto when pushed back beyond the point of minimum throttle opening.

Unfortunately considerable skill or familiarity with the manipulation of this lever was necessary in order to shut it completely off in an emergency without at the same time momentarily letting go of the steering wheel. Another emergency short-circuiting switch for the magneto was controlled by a wire within easy reach of the left hand.

Early on Sunday morning, April 17, the wind fell to less than four miles an hour and the "Flying Fish" was promptly taken out on to the marsh for its first trial, A. M. Herring in the seat. After running smoothly over the marsh on its skids under its own power the machine took the air easily, though with the bow considerably elevated, and flew some 50 yards or so to the end of the ground, where Mr. Herring decided to descend.

Mr. Burgess, the builder of the machine, then took the pilot's seat and made a similar

A. M. Herring in the Herring-Burgess Machine

flight of brief duration, coming down without difficulty when he neared an obstruction at the side of the field. This was Mr. Burgess' first attempt at flight and was successful in every way. The speed of the machine was carefully estimated at between 20 and 25 miles an hour.

Mr. Burgess then made a second attempt somewhat more ambitious than the first and flew a longer distance. The landing, however, was not quite so successful, as it started a screw in one of the landing skids which involved about five minutes for repairs. In the course of this brief interval the wind sprang up and further tests were postponed for the day.

Early Thursday morning the weather was again calm and Mr. Herring piloted the machine through four short flights with entire success. In coming down from the fourth flight, however, the "Flying Fish" passed through a tuft of tough marsh grass, the blades of which chipped a corner from one blade of the propeller. The wing tip also needed attention.

On Friday shortly after noon the wind again died down and Mr. Burgess invited his friend Greely S. Curtis, of New York, a consulting engineer in aviation engineering, to take the helm.

Since the test of the day before the rear horizontal rudder had been given a slightly greater lift in order to permit the aeroplane to soar at a flatter angle.

A short course was laid out for Mr. Curtis in a direction towards the aeroplane shed which was just behind a pool in the marsh. The intention was that the power should be shut down before reaching the pool and the machine come to rest on the marsh. On starting, however, the machine quickly gathered headway and was nearly up to the pool before the aviator realized that he had left the ground. Thinking that he was still traveling on the skid, Mr. Curtis turned to the left to clear the obstacles, at the same time lifting his forward plane. As a matter of fact the aeroplane had already been traveling some 200 yards or more through the air at a speed considerably in excess of any previously employed. The combined effect of the turn to the left and of lifting the forward plane was to give the aeroplane a tilt downward to the left. The proper way to regain equilibrium would have been to alter the course of the machine to the right, but this was under the circumstances impossible, owing to the immediate proximity of the building and other obstacles on that side of the course. To prevent tilting any further toward the left, Mr. Curtis shut off the power and the machine glided down, first striking the tip of its left wing. The effect of this blow was to tip the bow of the machine sharply downward, and deposited the aviator without a scratch or bruise on the surface of the soft meadow. The bow rudder sustained the principal impact of the blow and was considerably damaged. The body of the machine was so well constructed that not a crack was to be found in any part of the main frame, nor did a screw start from its position. The engine was tested and found to be absolutely unhurt, as were also the other essential parts of the mechanism. Beside the forward rudder and its support, the only parts damaged were the two ends of the lower plane. The right end of the lower plane was slightly damaged, evidently through the whiplike action of the whole plane when its progress was abruptly arrested. It was estimated that two days would be required to repair the damage, and a part of a third day to bring the repairs from the workshop at Marblehead to the testing ground at Newburyport.

Wright School at Dayton.

The Wright Co. has started an instruction school at Dayton in charge of Wilbur Wright, with two machines. A number of men are to be tried out, from which a selection will be made for aviators. Five men have been studying at Montgomery, Ala., on one machine under the tutorship of Orville Wright. Twenty-five machines are now coming through the shops, five of which are now practically complete.

A slight change has been made in the engines fitted to the new machines, which are of the usual type. It is of interest to note that the Wrights insist on certain parts of the engine being produced under their personal supervision. For instance, machines have been installed to bore the cylinders and to make the piston rings. They are not trusting to contract work on these important matters. The connecting rods and valves are also turned out at Dayton. The valves are of cast iron with steel stems.

The Wrights say that but 5 per cent. is lost in the chain transmission, and that 75 per cent. is the actual work produced by the propellers.

Prof. Montgomery Building 'Plane.

Prof. J. J. Montgomery, of Santa Clara College, in California, is rushing work on an aeroplane incorporating the features of his gliders tried out in 1884 and 1885 and later in 1903-5.

The machines of 1884 and later contained devices for presenting to the wind varying angles of incidence with relation to each other and a patent was taken out on this system. Prof. Montgomery is now taking up the work he had to stop at the time of the San Francisco earthquake in 1906.

James E. Plew, 240 Michigan Ave., Chicago, has the exclusive manufacturing rights for the Montgomery machine. Part of the big new sales, office and garage building has been equipped for the manufacture of these machines. The first machine is expected to be finished the latter half of May.

Y. M. C. A. Aeroplane.

A biplane, designed to carry two persons, is being built by the men of the Alumni Association of the West Side Young Men's Christian Association, 318 West 57th St., New York, who are graduates of the aeronautic class of the season of 1909.

In all of its characteristics, even down to the pitch of the propeller, the biplane is a composite of ideas of a dozen men. After finishing the course in aeronautics, during which time the men were practicing with model aeroplanes, the members of the class got together and organized the Alumni Association, and at the first meeting a resolution was offered and passed that the alumni build a biplane for two passengers. Sometimes as often as three days a week the men got together and point after point in the plans were taken up and discussed. The plans, after a number of meetings, settled down to a biplane, but of a different style than anything that has gone before it in the line of aeroplanes. In the arrangement of the planes, the material in the frame, the style engine and every other phase of construction the men all had a say and all had ideas.

One thing that kept the alumni members very busy was the invention and working out of a steering apparatus which will not be interfered with by the Wright patents and which will at the same time be practical and safe. They say they have solved the problem.

Dr. Rex C. Northwood, of 1777 Broadway, is president of the Aeronautical Alumni Association, and Francis C. Wilson, of No. 477 First Ave., is secretary and treasurer. Four others of the alumni are engaged with them in the labor of erecting the machine.

The members of the alumni will permit the biplane to be used for instruction of men in future aeronautic classes.

Louisville Booms Model Meet.

The Louisville "Times" has inaugurated a contest for model aeroplanes and dirigibles for prizes totaling more than $200. This is the first time that a newspaper has taken up the encouragement of the young idea in aeronautics. This initiative should induce others to follow.

There are no entry fees or stringent regulations. The competition is open to all. The aviation contest is divided into three parts: (1) for boys between 18 and 21, (2) between 12 and 18, (3) and under 12 years. The demonstrations will begin on June 20. The prizes in the first class total $60, in the second class $45, and in the third class $40. Any model that flies by its own power other than prize winners, will receive $2; $55 has been allotted for the dirigible prizes.

Awards will be made as follows: In the first two classes lightness and weight count 10 points, time in air 20 points, workmanship and appearance 30 points, distance 40 points, ability to rise from platform and fly 10 ft. or more in a true flight, 50 points. In class 3, for boys, under 12, with models having no power, workmanship and appearance count 50 points, lightness in weight 30 points, and probability to fly 20 points.

The announcement of the "Times" aroused a number of prominent men, with the result that contracts have been signed with Curtiss aviators for a meet on June 18-19, when an exhibition will be held at the Churchill Downs race track under the auspices of this newspaper and the management of Col. J. L. Gribble, of long and pleasant aeronautic memory.

It is the plan of the "Times" to continue the amateur contests, and if the aeroplane meet is successful, to arrange for a long distance balloon race in the Fall.

Flights Begin at Mineola.

Clifford B. Harmon, who purchased the Farman machine used by Paulhan in his flights in America, has been practising and has made short flights up to one of a mile straightaway. No attempt is being made by Mr. Harmon to do much in the way of flying until he has accustomed himself to the machine and its operation.

W. L. Fairchild has about completed a beautiful monoplane fitted with the first of the Requa-Gibson two cylinder 50 h. p. motors. Capt. Thos. S. Baldwin has his aeroplane installed in a tent and will soon begin experiments. All three machines are on the Aero Cub of America's ground.

The big shed of The Aeronautical Society has already had all its space leased to members. Among these are Miss E. L. Todd, L. J. Rosenbaum, W. J. Diefenbach, Charles Morok, Dr. H. W. Walden and Joe Seymour with his Curtiss. Seymour will make his practice flights at Mineola before going out on exhibition work.

An office has been partitioned off in the shed for the keeping of records and the use of a superintendent.

Mineola, May 15.—Mr. Harmon made three fine flights to-day, two of about ten minutes and one of eighteen minutes. Glenn H. Curtiss flew the Baldwin machine for about three miles in a circle. Then Capt. Baldwin began practising, running along the ground and making short jumps.

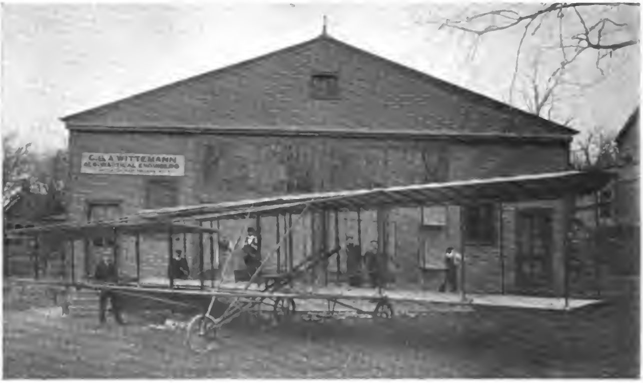
Wittemanns Complete Aeroplane.

C. & A. Wittemann, the Staten Island, N. Y., aeroplane builders, have completed, with the exception of the power plant, a biplane for the Barberton Aeroplane Co., of Barberton, Ohio.

The machine has a spread of 37 ft., depth 6 ft. 3 in., between surfaces 6 ft. A front rudder 14 ft. spread by 2½ ft. deep is located 12 ft. in front of the main planes. This front rudder is divided in two portions, either of which may be set at varying angles. 12 ft. to the rear is a double surface vertical rudder 6 ft. high by 2½ ft. deep, spaced 20 in. apart. Bisecting this are vertical surfaces 20 in. by 2½ ft.

All of the beams are fish-shaped. The regular ribs are shaped like those in the Curtiss machine, are laminated, and measure ⅝ in. wide by 1¼ in. high. The big ribs are ¾ in. by 1½ in. The Naiad No. 6 cloth is laced with the best quality fish line.

Another aeroplane is being built by the Wittemann Bros. on a customer's order. This will have a double horizontal rudder, a box tail and vertical planes like the Voisin machine. A 75 h. p. Whitehead motor will drive an 8 ft. propeller.



Barberton Machine

Wheels on Army Aeroplane.

Lieut. B. D. Foulois, of the U. S. Signal Corps stationed at Fort Sam Houston, Texas, is installing wheels on the Signal Corps Wright aeroplane in order to do away with the starting device used to date.

For Some A. C. A. Members.

An optimist is one who would rather believe that everything is all right than know the truth.—*Lippincott's.*

Aeroplane whiskey is the latest beverage. It is said to be like squirrel whiskey, only more so.

Gordon Bennett at Mineola.

May 14.—The Aero Club of America has decided on Mineola as the place for the Gordon Bennett aviation race, on Oct. 22. There will be other events covering at least six days. Andrew Freedman, of the Wright Company, and L. L. Gillespie, of the Club, have been appointed a committee.

One or two professional promoters of sporting events are willing to finance the meet, together with a series of flight days covering ten days or two weeks, on the basis of a division of the profits between the backers, the Wright Company and the Aero Corporation, Ltd., the stock-holding part of the Aero Club of America. These proposals are now being considered by the club. Los Angeles has also made an offer for the meet.

A pamphlet has been sent out by the club containing a statement of its position with regard to the Wright-Aero Club agreement, and giving in full the text of the contract.

BALTIMORE SAYS "BAD FAITH."

Baltimore and Washington have withdrawn from the contest for the international aviation meet.

The action of the Baltimore and Washington committee was taken following an ultimatum sent to the Aero Club of America giving it ten days to name the place of the meet. Answers to this were unsatisfactory.

Col. Jerome H. Joyce, president of the Aero Club of Baltimore, charges bad faith on the part of Cortlandt F. Bishop, president of the A. C. of A., and says the New York men have diverted the meet to their own neighborhood. The $100,000 raised has been returned to the subscribers.

Colonel Joyce said he was much incensed at the action of the Aero Club of America. He said it had practically ignored all communications sent them regarding the meet.

"We cannot afford to be treated in the manner in which the Aero Club of America has adopted," he said. "We were strong bidders for the meet, and showed that we were anxious for it. Our guarantee fund has been pledged, and it has been effectively pointed out that the College Park site is about the best that could be obtained anywhere in the country.

"Mr. Bishop traveled over the country inspecting the proposed sites, and at that time he said the selection of the site would rest in the hands of the aviators, Wright, Curtiss and Paulhan. We were then sure that College Park would be selected, because Wright and Curtiss had already inspected the field and had expressed delight with it. When Mr. Bishop heard this I think he at once took up with Paulhan to keep the meet from this city. Paulhan never inspected the site, and suddenly came out as strongly opposing it."

Coming Events in Flying

Big St. Louis Programme.

A. B. Lambert has been given authority by the Aero Club of St. Louis to go ahead with the biggest programme in aviation and ballooning planned by an American club this year. The programme includes at least three balloon races and two aviation meets.

The first event to be held will be the aviation meet for novices, probably June 20 to 25, when prizes of sufficient cash value to stimulate competition will be offered.

Anyone who has a machine which can fly at all should write Secretary E. Percy Noel, 304 N. 4th St., St. Louis, Mo., for entry blanks. Prizes of $100 will be given to each novice who flies 100 yards or more. A circuit of the course will bring $250, while on each day the first man to fly 200 yards will be awarded $100.

The entrant who remains the longest in the air after qualifying by a circuit of the course will be given $1,000. There are also offered $50 each one who attains an altitude of 50 feet, $500 to the man who gains the greatest height, minimum 100 feet, and prizes for total time in the air during meet, quick start, fast speed and slow speed.

Two balloon races will be held in June from the Aero Club ascension grounds, on Chouteau Ave., the first under the auspices of the club, but at the expense of Mr. Lambert, in honor of the American Medical Association, which will be in convention at St. Louis, June 6 to 11. The Aero Club has tendered the use of its balloons to be allotted to pilots by the president.

The second balloon race will be held for the edification of some 20,000 members of the American Woman's League, which will convene at University City the week of June 20. The Aero Club will finance this event.

The second aviation meet will be held October 5 to 15, immediately preceding the international balloon race from the Aero Club grounds, October 17.

Aviation Meeting at Dayton.

The Dayton Aeroplane Club is planning for its aviation meet, being arranged by the Chamber of Commerce, to take place during the week of the fall festival. The flight committee has recommended the use of the Simms prairie which the Wrights used in their early flights and are now to be used for training grounds.

Officers have been nominated for the election to be held June 1. President, O. J. Needham, who has efficently served as head of the organization since its formation last year, has declined to be a candidate for the same office again.

Biggest Meet at Indianapolis.

Every aviation "fan" is looking forward to the Indianapolis aviation meet at the Motor Speedway, June 13 to 18. This is the first meet to have been arranged for subject to the license agreement of the Wright Co. The Motor Speedway promoters, it is said, have guaranteed to the Wright Co. that its share shall be $50,000, for five or more machines; $20,000 additional to be spent in advertising and promoting, and $25,000 more will be put up in prizes.

The meet is open to every type of machine without the contestants making any arrangement or having any dealings whatever with the Wright Co. Wilbur Wright has stated that he expects to have six or eight Wright machines at the meet. These alone will make a series of demonstrations of flights the most pretensive yet given in this country. J. W. Curzon, who has been making some short flights with his Farman machine at the Speedway, will be a contestant, and Carl G. Fischer, president of the Speedway, is trying to secure for prompt delivery a foreign machine for himself, in addition to two machines he has purchased from local inventors.

The contract which the Wrights signed with the Speedway reads, in one clause, as follows: "In consideration of the above agreement, the Wright Co. hereby licenses this meet and agrees to make no further charge for any machine taking part in this meet which may infringe on its patents."

Every individual aviator who has a machine seems to want an enormous set sum for exhibiting or flying, so that the amount set aside for prizes will probably have to be paid out in guarantees, and cups be the only "prizes."

When will the sport be on a sporting basis, as horse and auto racing?

Incorporations.

Bennett-Christofferson Airship Co., of Portland, Ore.; capital $3,000. Incorporators: Fred A. Bennett, Silas Christofferson and Mabel A. Bennett.

Illinois Aviation Co., Chicago (?); $1,400; amusement devices; Leon S. Alschuler, Gabriel J. Nordan, Chas. W. Stiefel.

National Manufacturing & Aerial Exhibition Co., capital $50,000. Under laws of Delaware. Incorporators: Eric R. Mackay and James L. Davis, of Chicago; George W. Darsey, Jr., of Wilmington, Del.

Arrowplane Mfg. Co., Boston, $25,000; W. M. Hilliard, Boston, W. E. Timson, Lynn.

Sacramento (Cal.) Aerial Co., $15,000; Tracy A. Miller, E. R. Drake, G. H. Seamans and A. D. Bevan.

Ross Aeroplane Co., Mobile, Ala., $10,000; Otis McMahon, W. R. Ross, Jr., Alfred Ross, A. B. Barringer.

International Aerial Navigation Co., Seattle, Wash., $1,202; H. P. Decker, Ada B. Blackwell, Elijah B. Carrott and David W. West.

Robert Carlson Airship Co., Butte, Mont., $250,000; Robert Carlson, S. T. Hogevoll, John A. Smith.

Swedish-American Aerial Club, Chicago, Ill., to manufacture aerial machines, $2,500; Edward Bjork, Adolph R. Engwall, John C. Jones.

Rinek Aero Mfg. Co., Easton, Pa., $50,000; Howard Rinek C. Norvin Rinek, Frank R. Buckman.

Aeronautic Calendar for U. S.

May 20—Urbana, Ill., exhibition flights with Curtiss machine.

May 28-30—Joplin, Mo., flights by Willard and Mars.

June 6-12—St. Louis, balloon race.

June 7-9—Topeka, Kan., flying by Willard and Mars.

June 13-18—Indianapolis, Ind., "First Nat. Aviation Meet," with exhibitions with Wright machines and open to all others.

June 18-19—Louisville, Ky., Curtiss aviators.

June 19-26—Nashville, Tenn., exhibition flights at Military Tournament by Hamilton.

June 20-25—St. Louis, balloon race and aviation meet.

June 22-25—Minneapolis, Minn., flights by three Curtiss aviators.

July 5-6—Peoria, Ill., balloon race.

July or August—Philadelphia Pa., aviation meet.

August 12—Indianapolis, Ind., balloon race.

Sept. 5-10—Lincoln, Neb., exhibition flights by Wright aviators.

Sept. 5-10—Hamline, Minn., exhibition flights by Wright aviators.

Sept. 17—Indianapolis, Ind., elimination race for Gordon Bennett balloon race.

Sept. 19-24—Detroit, Mich., Wright exhibition flights.

Sept. 26-30—Trenton, N. J., exhibition flights by Wright aviators.

Oct. 1-8—Springfield, Ill., exhibition flights by Wright aviators.

Oct. 3-8—Sedalia, Mo., exhibition flights by Wright aviators.

Oct. 5-15—St. Louis, Mo., aeroplane exhibition.

Oct. 17—St. Louis, Mo., Gordon Bennett balloon race.

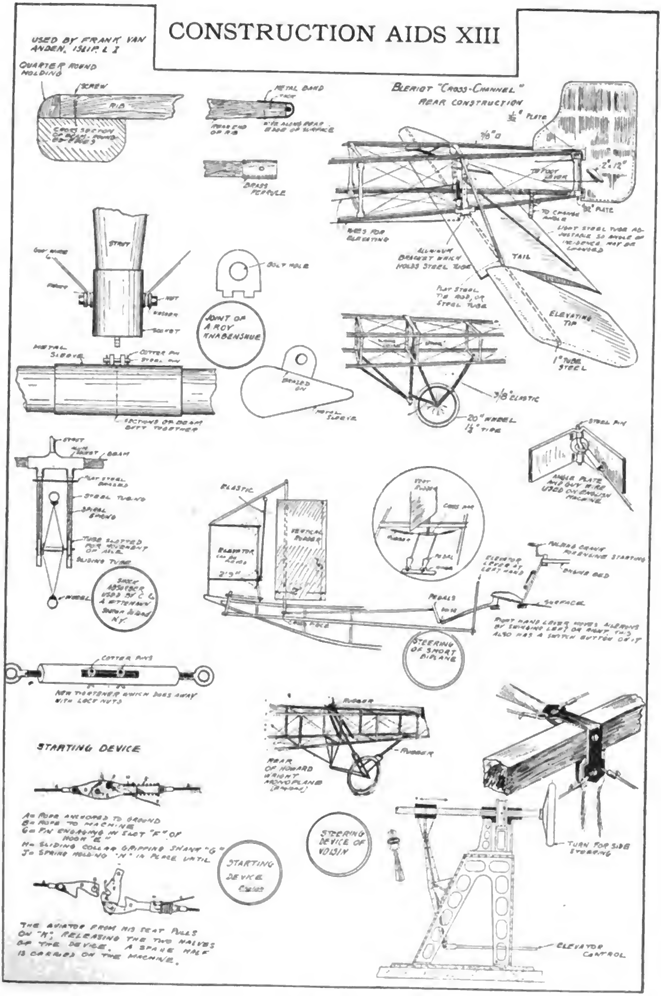
Oct. 22—Mineola, N. Y., Gordon Bennett aviation race.

———, Cleveland, O., aviation meet.

———, Buffalo, N. Y., aviation meet.

Dec. 1-8—Chicago, Ill., aeronautical exhibition of A. C. of Illinois.

CONSTRUCTION AIDS XIII


USED BY FRANK VAN ANDEN, ISLIP, L. I.
QUARTER ROUND MOLDING
SCREW
RIB
CROSS SECTION OF BEAM - ROUNDED EDGES
METAL BAND
TACK
REAR END OF RIB
EYE ALONG REAR EDGE OF SURFACE
BRASS FERRULE
BLERIOT "CROSS-CHANNEL" REAR CONSTRUCTION
1/32" PLATE
3/8" D
2"x12"
TO FOOT LEVER
1/32" PLATE
TO CHANGE ANGLE
WIRES FOR ELEVATING
LIGHT STEEL TUBE ADJUSTABLE SO ANGLE OF INCIDENCE MAY BE CHANGED
ALUMINUM BRACKET WHICH HOLDS STEEL TUBE
TAIL
FLAT STEEL TIE ROD, OR STEEL TUBE
ELEVATING TIP
1" TUBE STEEL
3/8" ELASTIC
20" WHEEL 1½" TIRE
STRUT
GUY WIRE
FERRULE
NUT
WASHER
SOCKET
BOLT HOLE
JOINT OF A. ROY KNABENSHUE
METAL SLEEVE
COTTER PIN
STEEL PIN
SECTIONS OF BEAM BUTT TOGETHER
BRAZED ON
METAL SLEEVE
STEEL PIN
ANGLE PLATE AND GUY WIRE USED ON ENGLISH MACHINE
STRUT
ALUM. SOCKET
BEAM
FLAT STEEL BRAZED
STEEL TUBING
SPIRAL SPRING
TUBE SLOTTED FOR MOVEMENT OF AXLE
SLIDING TUBE
WHEEL
SHOCK ABSORBER USED BY C. & A. WITTEMANN, STATEN ISLAND, N.Y.
ELASTIC
ELEVATOR CAN BE RAISED
2'9"
VERTICAL RUDDER
CROSS PIECE
VERT. RUDDER
CROSS BAR
RUDDER
PEDAL
ELEVATOR LEVER AT LEFT HAND
FOLDING CRANK FOR ENGINE STARTING
ENGINE BED
PEDALS
SURFACE
RIGHT HAND LEVER MOVES AILERONS BY SWINGING LEFT OR RIGHT. THIS ALSO HAS A SWITCH BUTTON ON IT
STEERING OF SHORT BIPLANE
COTTER PINS
NEW TIGHTENER WHICH DOES AWAY WITH LOCK NUTS
RUDDER
RUDDER
REAR OF HOWARD WRIGHT MONOPLANE (ENGLISH)
STARTING DEVICE
A = ROPE ANCHORED TO GROUND
B = ROPE TO MACHINE
G = PIN ENGAGING IN SLOT "F" OF HOOK "E"
H = SLIDING COLLAR GRIPPING SHANK "G"
J = SPRING HOLDING "H" IN PLACE UNTIL
THE AVIATOR FROM HIS SEAT PULLS ON "H", RELEASING THE TWO HALVES OF THE DEVICE. A SPARE HALF IS CARRIED ON THE MACHINE.
STARTING DEVICE English
STEERING DEVICE OF VOISIN
TURN FOR SIDE STEERING
ELEVATOR CONTROL

Halley's Comet From a Balloon

Opening of the Ascension Season

FOR the first time in the history of astronomical investigation successful observations were made from a balloon, as Prof. Todd, with Mrs. Todd, and piloted by Charles J. Glidden, was able to make accurate sketches of Halley's comet, observe the planet Venus, the moon and the sun and at the same time to focus on the comet a 2½-in. telescope with a magnifying power of 30 diameters, and to hold the sight for some time, due to the absence of anything but slight vibrations in the balloon. Observations were taken when the big bag was about 5,000 ft. from the earth.

SHOT AT BALLOON.

The trip was not without its thrill of danger, for just before sunrise, when the balloon was three miles from Manchester, Conn., the report of a rifle was heard and soon after it the whiz of a bullet passed the basket of the balloon. The balloon at the time was about 1,400 ft. above the earth and although the bullet did not strike the balloon, it passed very close to its occupants.

Prof. Todd claims to have refuted absolutely the theory of scientists that astronomical observations of any value cannot be taken from a balloon, for he says that he was able to get a much better view of Halley's comet through a 2½-in. telescope with a magnifying power of 30 diameters from the balloon than through the big 18-in. telescope at Amherst observatory.

Ideal atmospheric conditions prevailed for the observations and with the balloon traveling steadily and with only slight vibrations Prof. Todd was able to sight the telescope upon the comet and hold it upon the object without any difficulty, thus proving that a powerful telescope can be used from a balloon.

"The comet appeared from six to eight times as bright from the balloon as through the powerful 18-in. telescope on May 1," said Prof. Todd. "This is partly due to the increased brightness of the comet since that time, but most of all to the elevation, for we were 5,000 ft. from the earth at the time the comet was first seen. Mrs. Todd first saw the comet at 2.36 o'clock, with its head very near the horizon and its fantail at 20 deg., and very bright. I made four sketches of the tail, which curved at its upper end slightly upward toward the north instead of downward, as it has previously been noted. The display was a splendid one and astronomers can be assured that Halley's comet will not be the disappointment it has been thought it might be.

Youngest American Aeronaut

The balloon observation showed the head of the comet very bright and the tail four or five times as long as previously noted. On May 25 the comet will appear 10 or 12 times as large as it does now. Prof. Todd gives the difference in atmosphere as a reason for the smaller appearance of the comet from the observatories as compared to his aerial observations.

Some meteors and shooting stars were noted, but Prof. Todd does not believe they had any connection with the comet.

A device of Prof. Todd for measuring the height of mountains was tried out and found to work accurately. This device, which is merely a level placed on a surveyor's telescope, is leveled on the summit of a mountain and then with the barometric measure taken at the same time, the height of the mountain is figured. Monadnock mountain was used in the trial and the result was the same as the known height of the mountain.

Prof. Todd's invention of an automatic rotating parachute designed particularly for aeroplanes was given a trial with a model built for him by his mechanician, E. A. Thompson. The device consists of two rotating vanes or planes turning in opposite directions, really a screw propeller with reversed blades. A bottle was attached to the model and it was dropped from the balloon when at a height of 1,500 ft. At first the model traveled at a fair rate of speed and then slowed perceptibly and finally struck the earth without breaking the bottle.

Michigan Club Starts Season.

The Aero Club of Michigan inaugurated the first of its series of ascents from the club grounds at Jackson, Mich., on April 11, when Leo Stevens took up in the balloon "Cleveland" Messrs. Frederick M. Alger, William E. Metzger, E. W. Lewis and "Jack" Kraemer. While the club will have its own balloon early in June, when ascensions will take place weekly, the balloon used on this trip was J. H. Wade, Jr.'s. During the trip the balloon passed into the edge of a rainstorm. Pilot Stevens noticed that the trail rope seemed to shoot sparks when it touched parts of the earth's anatomy and thought it best to make a landing before anything extraordinary occurred. He didn't tell his passengers what he saw, however, but when all were safe on the ground the rope looked as though it had been burned for a considerable distance.

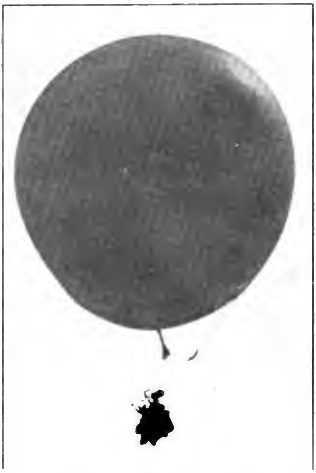
Frank Kanne and two friends went up from Peoria in Eugene Brown's balloon "Peoria," then descended, exchanged passengers and went on, mooring the balloon over night with the intention of making a new ascent in the morning, but there was found to be insufficient gas remaining.

Wilhelm Heinrichs, a sightless man, the first on record, was a passenger with Charles J. Glidden from Pittsfield on April 29. Mr. Glidden has made three ascents already this season. In his forty-two ascents he has covered 1,358 aerial miles. Other ascents were made, as noted in the column devoted to ascensions.

Youngest American Aeronaut.

Robert Thaxter Farmer is probably the youngest person in the world to have made a balloon trip. He was only three years old when he was a passenger in Carl E. Myers' balloon from Worcester, September, 1909.

He was accompanied by his father, Frederick Farmer, a gentleman deeply interested in aeronautics, and who made gliding experiments near Worcester last fall. Mr. Farmer is now at work building another of an improved type to take the place of the one which was damaged in the previous successful experimental flights. A lot of gliding will be done this summer. A movement has been started by Mr. Farmer and others interested in gliding, to petition the City Park Commission to grant the use of the public parks for the purpose.



Cleveland Club's First Ascent of Year

Forbes Fails to Make Record.

May 11.—Newspapers report this morning that A. H. Forbes and J. C. Yates, who left Quincy, Ill., in a balloon in an attempt to make a new record, were found in an exhausted and bruised condition near Center, in Metcalf County, Ky. The wind currents encountered blew the balloon in a circuitous course after leaving the ground, and it is thought that all the ballast had been expended in trying to find a favorable air stream. Neither man was seriously injured.

Mr. Forbes, it will be remembered, was a contestant in the 1908 Gordon-Bennett race from Berlin, when his balloon burst.

Zodiac Airship Coming.

Leo Stevens has finished erecting at Narragansett, R. I., a 6,000-ft.-an hour hydrogen plant, triple system, for the Zodiac airship that is due here from that dear France the end of May for Stewart Davis, a wealthy young enthusiast. Bids are now being secured on a shed large enough to house the dirigible balloon.

The "Club Journal," the official organ of the Automobile Club of America, in a recent issue states that "all the durations (sic), speed and balloon tests during the year have been won by the Aero Club of America." The sentence does not make sense and what the writer evidently meant to say is not true, in either flying machines, dirigibles or spherical balloons.

News In General

For a National Federation.

Already over 30 aero clubs in the United States have united in the organization of a national body, composed of representatives from each of the clubs of the country. Such a federation would, if properly conducted, work wonders for aeronautics in this country. It would bind together individual interests and unite the activities of the country in an organization which is already much needed to save the art from being the vehicle of any one club's aspirations for control.

A call was sent out to the principal clubs throughout the country for an expression of opinion on the formation of an Aeronautic Federation, and the response was so generally favorable and widespread that a general call for co-operation followed. In this, forms were enclosed asking for views on various matters and up to the present time more than 30 clubs have actually associated in the movement.

A committee is now being organized representing these various clubs and have temporarily selected the name "The Aeronautic Federation of America" until the convention is held. The office of this committee is at 170 Broadway, New York, at which address all correspondence should be directed.

It is argued that the preservation and development of American aeronautical interests demand the immediate organization of a national representative body and it seems that many clubs and societies throughout the United States believe that this will facilitate development of the art and sport. Under these circumstances it is thought advisable to have the fullest expression of opinion from all the American aeronautical institutions, with a view to calling a convention at a central point for the organization of the desired federation.

With a view to obtaining definite opinions on these points forms of questions have been sent out to all the clubs and societies interested in the movement. These questions will furnish suggestions for use in arranging the details for such a convention.

It is hoped that the clubs will take the matter in hand at once by the appointment of a committee to deal with it, with a view to the appointment of a member to act on the federation committee.

Work will be prosecuted with all fervor towards holding this national convention by the 80 and more clubs of record.

A question sheet is sent out with each letter. Among the points covered are the following:

Do you approve of a national aeronautic federation composed of representatives appointed by the various clubs and societies?

Do you think one representative for each hundred members would give proper representation? If not, how many members in a club do you consider should be represented by a member of the federation?

Do you think the representative should be elected or appointed on a definite date once a year?

In what city and state and at what time will you prefer that the first convention of the federation be held?

What name would you propose should be given to such federation?

Do you approve of voting by proxy at the convention by any club or society not sending a representative, providing the proxy specifically stipulates the matters and the manner of the vote?

Do you think this federation should devote itself to the sporting and scientific development of the art?

To aid standardization in and encourage manufacture and commercial development and to assist in promoting proper legislation, etc., do you approve, or do you disapprove, of any of these objects and have you any others to suggest?

Patents.

Owing to the lack of space we have had to hold over our patent list. Begining next month we will give the filing dates as well as dates of issue.

Robert W. Stewart, East Oakland, Cal., 951,154, March 8. Monoplane, the novelty of which consists in the body and the wings being substantially of trapezoidal form and the central portion being dropped down in the form of a hollow, open V-shaped trough, widened towards the rear with pyramidal breast, a center board portion along the lower edge of the breast and a propeller and steering rudder at the forward end of the breast.

Herman F. Weidel, Rochester, N. Y., 951,585, March 8. Aeroplane, comprising front and rear converging planes extending from, and pivotally supported by, a common axial center which also supports the operator and operating mechanism. These planes are referred to as hollow prismatic structures.

L. C. Hincannon, Seabright, Cal., 915,615, March 8. Flying Machine, of the ornithopter type. A supporting framework is provided with horizontal plane at each end, while at sides longitudinal shafts are provided to operate feathering paddles through rotation and differential gearing.

Alfred Wunderlich, Brussels, Belgium, 952,167, March 15. Motor Flying Machine. The object of this invention is to utilize jet propulsion and partial vacuum suction. The body or hull is divided into a plurality of alternating pressure and suction chambers, the former closed on top and open at the bottom, while the latter are open on top and closed at bottom. The chambers are connected by apertures and rotary wings are mounted in the pressure chambers adapted to draw the air from the suction chambers and compress it in the pressure chambers.

FOREIGN LETTER

Paulhan Wins $50,000 Prize in 185-Mile Flight Across Country :: ::

Paulhan at Manchester

Three men were ready the end of April for the London to Manchester $50,000 prize offered by the "Daily Mail." These were Claude Graham White, an Englishman; Paulhan and Dubonnet, both Frenchmen.

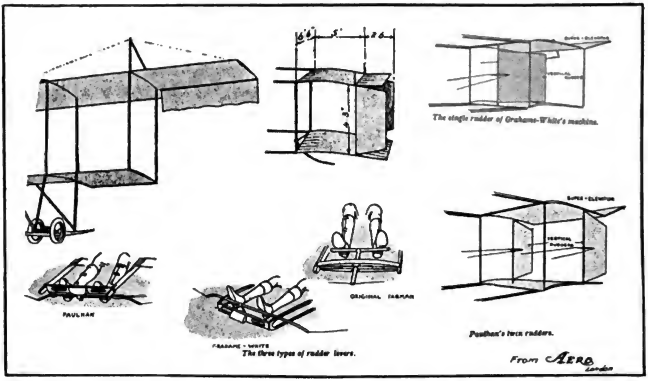
Paulhan's machine arrived near Hendon on April 27th and was assembled by 5 o'clock the same afternoon. After getting the machine in shape, he flew across country to Hampstead Cemetery, his official starting point. He passed the line at 5:31 p. m. Then he followed the railroad and after covering 117 miles landed at Lichfield station at 8:10. A special train with Farman, Mme. Paulhan and mechanics arrived at Lichfield shortly after.

The night was spent at a hotel and another start made the following morning at 4:09 a. m. The next landing was at Didsbury, two miles from Manchester and within the 5-mile radius of the offices of the "Daily Mail." This won the prize, and, of course, Dubonnet did not make the trip.

A previous attempt was made by Mr. White on April 23rd from Wormwood Scrubbs at a little after 5:00 o'clock in the morning. He followed the railroad as far as Rugby, after flying 2 hours and 5 minutes. After a stop of an hour to warm up, he was again in the air, but landed not far from Lichfield as two inlet valve springs in the motor had become weak. This was a very windy spot and the wind did not subside. The machine had to be left out in the field and on the afternoon of the 24th, a sudden gust of wind blew it over.

Repairs were rushed on it and on the afternoon of the 27th it was again ready. It was decided not to start until the next morning and White took a much needed nap; but it was costly repose for while he was asleep, Paulhan started. White received the news nearly an hour after Paulhan had left on the first leg. White did his best to make up lost time and actually got away at 6:29 p. m. He came down again at 7:55 at Roade, after covering 60 miles. Here White spent the night and started in the pitch dark at 2:50 a. m. Everything was going well until 4:13 a. m., when the engine began to give trouble and made a descent necessary at Polesworth, 107 miles from London, about a few minutes before Paulhan started from Lichfield some 6 miles further ahead. Before the engine could be gotten in shape again, Paulhan had reached the goal. Had White been able to continue at this point, he would have been almost over Paulhan's head when Paulhan started.

Paulhan had the advantage of starting on the long flight fresh, while White had been putting in nights and days on the machine since the accident. Paulhan had a new and somewhat lighter and faster machine and had the lower plane shortened by cutting it off at the inner pair of struts at each end, and therefore there was but one pair of ailerons (on the upper plane) instead of two pairs, upper and lower, as in Mr. White's machine. Graham White had but one vertical rear rudder. Paulhan's had two rear vertical rudders which gave him better control. The White machine is the same as the machine



The single rudder of Grahame-White's machine.

Paulhan's twin rudders.

The three types of rudder levers.

From AERO London

Paulhan left in America, except for the foot levers. The distance from the starting and landing place is 185 miles.

Two new prizes were immediately offered by Lord Northcliffe, the publisher of the "Daily Mail," totaling $50,000. One is for a flight from Paris to London and the other is for a trip in England, conditions yet to be determined. It is reported that the latter is for a flight from London to Edinburgh and back. The railroad distance between the two points is 400 miles.

There seems to be a difference in the manner of successful flying men in England and in France. In England the men who are doing the best flying are men in high social circles, while in France the best flyers are coming from the mechanic class, and their modesty is not their most prominent trait.

Paulhan's engine is a 7 cyl. Gnome, 50 h. p. All ball bearings used are "F. & S.," for which the J. S. Bretz Co., Times Bldg., New York, is the American agent.

England.

J. T. Moore-Brabazon has been awarded the British Michelin $2,500 trophy and $2,500 in cash for the best distance made by a British aviator. His distance was 18¾ miles on March 1. The Hon. C. S. Rolls has made the first flights with his Sommer machine. Cecil Grace has fitted a Gnome motor to his Short-Wright. J. Radley has started practice on a Bleriot.

The British Army Airship II. has made another ascent of 70 mins.

France.

So many short flights are being made daily in every part of the Republic that it is impossible, and valueless as well, to recount them. Mention is made only of the more notable ones. All the manufacturers have established schools for the teaching of purchasers.

To date, 97 flights of an hour or more in duration have been made by some 42 different aviators in 19 months' flying, 9 different makes of machines. The H. Farman machine heads the list with 36 hour flights, Wright 22, Voisin 15, Bleriot and Antoinette 10 each.

Meets are being held or arranged for all over France.

DUBONNET FLIES OVER PARIS.

Although Count Lambert's exploit in flying round the Eiffel Tower some months ago electrified Paris, the Gay City had a greater thrill on April 23, when M. Dubonnet flew right across the city.

Starting from his flying ground at Draveil, near Jnvisy, at two minutes past three, M. Dubonnet followed the course of the Seine to Paris, then passed over the Place de la Concorde and the Avenue des Champs Elysees, and eventually landed with a gliding flight on the field at Bagatelle, where M. Santos Dumont carried out most of his early experiments. During the flight of seventeen miles Dubonnet flew mostly at a height of 60 metres, but once or twice he rose as high as 100 metres.

On April 26 Dubonnet made a short but sensational flight in the face of a gale for the benefit of Col. Roosevelt. The next day Ethel Roosevelt and Kermit were taken up by Count Lambert.

Dubonnet, a novice, is flying a new monoplane, the Tellier. He won (last issue) the "La Nature" prize of $2,000 in a 109 kil. cross-country flight on April 3, on his eleventh aerial voyage.

FOUR FLY IN AEROPLANE.

On April 20th, Roger Sommer made a new passenger record by carrying three besides himself. The trip lasted five minutes. The machine weighs 550 lbs. and the four people another 510.

NICE MEETING, APRIL 15-24—FINES FOR RECKLESS FLYING—WONDERFUL DURATION TOTALS.

$42,000 were distributed among eight competitors of the twelve entered at Nice. Eight contests were held, six of which were again won by Farman machines, with the other two by Antoinettes.

The Hon. C. S. Rolls, whose longest flight in England was 18 miles, was up several times for more than an hour. The last ten days was devoted to flying out over the sea. Nearly every day there were landings in the sea. Rawlinson, Chavez, Rougier, Grade, Riemsdyde and Latham all got duckings. Rawlinson was caught in the current of Effimoff's propeller and tossed in the water. Effimoff was fined $20 for dangerous flying.

Results were as follows:

Greatest Cumulative Distance—1, Effimoff (Farman), 960.398 kil. (596 miles); 2, Van den Born (Farman), 606.336 kil.; 3, Chavez (Farman), 440.33; 4, Rolls (Wright), 421.718 kil.; 5, Latham (Antoinette), 391.224 kil.; the other contestants, Duray (Farman), Oliesiaegers (Bleriot), Metrot (Voisin), Rawlinson (Farman), Grade (Grade), Rougier (Voisin), ranged from 82, 81, 80, 20, down to 12 and 9 kil. respectively.

Longest Distance Without Stop—1, Effimoff (Farman), in 1 hr. 15 min. 55 2-5 sec., 97 kil.; 2, Van den Born (Farman), in 1 hr. 58 min. 18 1-5 sec., 87.5 kil.; 3, Rawlinson (Farman), in 1 hr. 37 sec., 76 kil.

Speed for 5 Kil.—Effimoff (Farman), 5 min. 23 3-5 sec.; no other contestant.

Passenger Prize—Van den Born, in 1 hr. 10 min. 22 sec., for 62.708 kil., and Effimoff (both in Farmans), in 1 hr. 18 min. 51 4-5 sec. for 58.5 kil., were only contestants.

Circuit of Course—Latham (Antoinette) and Chavez (Farman), only contestants.

Starting Contest—Effimoff (Farman), only contestant, 10.5 meters.

Starting Contest (with passenger)—Effimoff again, 11.65 meters, only contestant.

Height—1, Latham, 656 meters, followed by Chavez (Farman), 644; Rolls (Wright), 242; Metrot (Voisin), 231; and Olieslaegers (Bleriot), 217 meters.

Three of the Farman machines had Gnome motors with Bosch magnetos.

CANNES MEET, MARCH 27-APRIL 5.

Thirteen machines were entered and $12,100 were awarded in prizes. The Farman machines won six of the ten contests, the Wright three, Curtiss one. Results as follows:

Prize for Total Distance—1, Christiaens (H. Farman), 5 hrs. 45½ min.; 2nd, 3rd and 4th places also with Farmans, running down to 3 hrs. 6 min.; five other contestants.

Prize for Duration without Stop—1, Crochon (H. Farman), 1 hr. 9 min. 29 2-5 sec.; only two other contestants, both in Farmans.

Prize for Circuit of Course—1, Baratoux (Wright); Riemsdyck (Curtiss), 3rd; seven other contestants.

Prize for Regularity—1, Crochon (Farman), 1 hr. 9 min. 29 sec.; all six other contestants had Farmans.

Prize for Landing—1, Christiaens (Farman); no other contestants.

Prize for Starting at a Fixed Time—1, Riemsdyck (Curtiss); four other contestants. By good luck Riemsdyck got away on the exact fraction of a second. Crochon was only 4-5 of a second after the time fixed, while Edmond in a Farman was 28 1-5 sec. ahead of the time.

Prize for Speed for 11 kil.—1, Edmond (Farman), 8 min. 1 3-5 sec.; three other contestants.

Prize for Height—1, Popoff (Wright), 207 meters; no other contestant.

Prize for Prescribed Cross-Country Tour—Popoff; no other contestant.

Eleven flights of more than an hour's duration each were made, all by Farman machines.

HOUR FLIGHTS.

On April 2, at Pau, Bleriot flew 1¼ hr. The same day Daniel Kinet flew a Farman 1 hr. 5 min. On the third, Captain Gibbs, a Farman pupil from England, flew 1 hr. 12 min. at Mourmelon. Sommer flew 1 hr. 5 min. over several villages from Mouzon. Capt. Dickson (H. Farman) flew 1 hr. 33 min. at Mourmelon on April 5. Leblanc at Pau flew a Bleriot for 1¼ hr. on April 11.

A dirigible, "Ville de Pau," has begun making passenger trips. The fare for a sail of 30 min. to an hour is $20.

Germany.

THE ZEPPELIN II DESTROYED.

After the airship manœuvres by the Zeppelin II, Gross I, and Parseval II the end of April, the Zeppelin II, after struggling with the wind on its way from Hamburg to Cologne, had to be brought to the ground. The following morning a violent gust of wind carried the ship away, and the only parts left of value were the engines.

The Parseval III was up for nearly an hour on April 7.

FOUR KILLED IN BALLOON.

A peculiar catastrophe overtook a party of balloonists who ascended from Bitterfeld, near Berlin, on April 16. At the start fine weather prevailed, but after about five hours' sailing, when the balloon was over Eisenach, it encountered a thunderstorm, and a little further on apparently was struck by lightning. This caused the gas to explode, and the car of the balloon fell like a stone to the earth, killing the four occupants instantly. The passengers were Herr Lnff, of Bitterfeld, Herr Leuchsenring, manager of the Parseval Airship Co. at Munich, and two residents of Leipzig. A committee of experts claims has investigated the wreck, and has decided that the balloon burst from exterior pressure.

Dubonnet Flying Across Paris

The Wright school is busy at Johannisthal, near Berlin.

HOUR FLIGHT.

On April 11, Jeannin, a new one, flew 2 hrs. 1 min. 55 sec. at Johannisthal in a Farman.

Italy.

At Florence on March 28 Van den Born flew for 1 hr. 20 min. in his Farman.

Leonino da Zara has been able to make short flights at Padua in his Voisin.

Russia.

The Duma has passed a bill providing for the construction of an airship fleet, the encouragement of their home manufacture, and 25,000 roubles as prizes for aeroplanes.

A Farman machine has been flown well by Outochkine, champion bicyclist, at Odessa.

Spain.

Two aviation fields have been opened near Madrid, where Stoeckel flies his Bleriot and Mamet (former instructor at Bleriot's Pau school) and two promoters fly Bleriots.

Before the Queen, in the face of a heavy wind, Mamet rose over three hundred feet, and flew eight kilometres in nine minutes on April 4. This is the Spanish height and duration record.

Stoeckel, after flying about 600 meters, got caught in a gust of wind, was overturned, and his wing was broken, but he was unhurt. Olieschlagers has been giving exhibitions with his Bleriot at Seville.

At Barcelona, one Godard flew over the city, and harbor for 55 min. on April 10.

Later in the month disappointed crowds stoned and fired three aeroplanes, and one aviator came near being lynched.

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Club News

College Men Organize.

On Saturday, April 30th, the postponed Intercollegiate Aeronautic Convention met at the Houston Club, University of Penna., Phila.

Delegates were present from Cornell, Columbia, Princeton, University of Pennsylvania, University of Virginia, Haverford College and Swarthmore College. Tufts was represented by proxy, and letters from a number of the other most influential American colleges assured the convention that while representation was at the time impossible, all that was done would be endorsed by them.

An Intercollegiate Aeronautical Federation was organized. G. A. Richardson, Penna., '12, was elected president, and Elmer Rae, Cornell, '13, secretary. The convention adopted a constitution and by-laws, decided to adopt an active policy in organizing clubs in other colleges, and authorized its executive board to affiliate with the national aeronautic organization broadest in field. This last action was taken because of the uncertain status of the Aero Club of America, several of whose affiliated clubs have recently withdrawn from its protection.

The colleges will be represented by one vote for every fifteen men. The first fifteen will be represented by the local president. No club with a membership of less than fifteen is eligible. Annual dues of twenty-five cents a man in the local clubs goes to maintain the national body. The incidental business of the federation is conducted by an executive board. This board consists of the president, first and second vice-presidents, secretary, assistant secretary, treasurer, and one delegate from each of the seven colleges represented by delegates at the first convention.

All college aero clubs already organized at the time of signing the proceedings may also become charter members by signing.

The secretary's address is: Elmer Rae, Esq., 702 University, Cornell University, Ithaca, N. Y.

The University of Chicago Aero Club is another college aero organization. The club has voted to build a glider.

The **University of Illinois Aero Club**, Urbana, Ill., has been formed, with L. P. Brode as president pro tem. Twenty members form the nucleus. Arrangements have been made by the Athletic Association of the university whereby a Curtiss machine will be there in May.

The club has the co-operation of Dr. E. T. Berg, head of the electrical engineering department, and of President James.

The **University of California Aero Club**, of Berkeley, Cal., has come into existence as the result of a crying need for unified action amongst the aeronautically interested members of the university.

The club has held a gas balloon ascension, making an 80-mile trip from Alameda, Cal. On April 23 members of the club made a number of successful glider flights at Fitchburg and Oakland in Becher & Wolf gliders, the longest of these flights being 210 ft. Lectures have been delivered before the club by S. E. Woodworth, a member; Lieut. Paul Beck, U. S. Signal Corps; Cleve T. Shaffer, second vice-president of the Pacific Aero Club. Mr. Woodworth, who is a cousin of Lieut. Selfridge, spoke on "Aerial Navigation and Aerial Craft." Lieut. Beck, a government expert in aeronautics, chose as his subject "Aeronautics in Peace and War." Mr. Shaffer spoke on "Aeroplane Design and Construction."

Prof. J. Hidalgo is president; T. P. Henshaw, vice-president; F. D. Woodworth, treasurer; T. W. Veitch, secretary. Prof. Hidalgo is a well-known figure in aeronautics on the coast, being a director of the Pacific Aero Club, and the author of a pamphlet, "History of Aeronautics."

An **Aeronautic Section** of the **Technology Club of Syracuse**, N. Y., has been formed by members of the club, scientific and technical men. It is not so much the aim to promulgate the sporting features as to aid individual investigators or constructor of machines. Credit is due Emil Pfleiderer, M. E., for originating the idea.

The **Tufts College A. C.**, Tufts College, Mass., has grown from 20 to 50 members in a month's time, and is still growing. A Chanute glider has been built, 20 by 4 ft., with a rear rudder having both vertical and horizontal planes. The front elevating plane, 6 ft. by 3½ ft., has an ingenious arrangement of light levers to elevate or depress it. It is trussed with Bessemer steel

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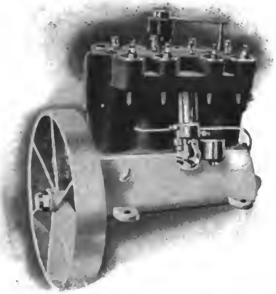

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wire, copper plated, with numerous turnbuckles. The total weight is under 100 lbs. All the work has been done by the members, using the machinery of the engineering department. The total cost was under $9, not including labor. One member, T. T. Greenwood, is engaged in making patterns for a 20 h. p. revolving cylinder motor, to be installed in a monoplane of his own design.

A goodly number of the engineering faculty are members. Among them is Prof. H. C. Chase, professor of physics, who has offered financial support in experiments. Prof. Chase is captain in the Mass. N. G. Signal Corps, and the club is co-operating with his command in the work. Captain Chase, it will be remembered, had considerable experience with balloons during the manoeuvers last summer.

E. P. Bugbee, '12, is president; G. W. Talbot, '11, secretary-treasurer.

The **Aero Club of Illinois** now numbers 250, although it was started in February of this year. The club was formed primarily to promote the sport in Chicago, and is working along the lines of other aeronautical societies. Little attention is being given to anything besides aeroplanes, and a number of members are either making machines or furnishing capital for others.

A training ground is being established for members and others interested in the work for the try-out of machines, and the club hopes eventually to have ample facilities for experimental work and a school for new aspirants.

A great many experimental machines are being built now in Chicago, and at least one concern has gone into the manufacturing of machines on a large scale. Of the many tracts of land which have been offered, two or three have been selected for final consideration, and one will be shortly decided upon, when buildings will be erected. By May 1st it is hoped to have one of the liveliest camps in the country.

As soon as the time is ripe for preliminary trials, weekly matinees will be held at which time prizes will be offered by the club for various trials and competitions. The club also expects to have one or two big meets during the summer, one before July 1 and the other early in the fall.

The **Princeton University Aero Club**, with a membership of 35, is now firmly fixed upon a progressive working basis. Its officers are: J. F. Thompson, president; Cyrus McCormick, secretary; and P. C. Smith, treasurer. Eight models are in process of construction, six of them being biplanes of various types, one a special designed monoplane and one a special design of the following plane type. Two of the members also are building biplane gliders. A model competition is to be held in the near future. The club is one of the members of the Intercollegiate body recently formed.

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If you desire to learn what the Society has done for the Art in the last eighteen months, send for the brochure just published reciting the accomplishments from the formation of the Society in July, 1908, to December, 1909. It is practically a history of aviation in the U. S. during the above period.

For the purpose of increasing the sphere of usefulness the membership should be augmented. Every additional member advances the general good.

¶ **Address the Secretary for booklet and application blanks at P. O. Box 28, Station D, New York; or 1999 Broadway, where weekly meetings are held.**

The Aeronautical Society continues to hold its semi-monthly lectures and discussions. A special night was that of April 21, when Prof. J. J. Montgomery described his experiments with warping gliders in 1884-5. On the 28th a discussion on the subject of models and their value was entered into between Messrs. W. R. Kimball, Louis R. Adams, R. E. Scott, Dr. C. Dederer, L. J. Lesh, Carlos de Zafra and W. S. Howell, Jr.

The society is keeping stenographic records of all proceedings, discussions and lectures. In due course, these are to be issued at stated intervals in booklet form for members and others. Some of these talks have proved extremely interesting reading.

The **Aero Club of America** called a meeting of members, in accordance with a provision of the by-laws, for May 5, but only 13 contributors of annual dues showed up—a quorum is 50—and no meeting could be held.

The **Aero Club of California** is in a very prosperous condition. A home for the club has been secured in the new Motordrome near Playa del Rey, some 16 miles from Los Angeles. This enclosure is 1,700 ft. in diameter and a mile in circumference. The club has a shed housing some 16 machines, five being already on the ground, with others coming that will fill it to its capacity. Shops and machinery are provided also. Prof. Twining, president of the club, together with Eaton Brothers have just finished remodeling a monoplane, a photograph of which was in the last issue of Aeronautics. A patent was applied for on the sliding panels at the tips of the planes, and the machine built before the inventors heard of Mr. Pfitzner's machine. A motor is expected to be installed during the summer.

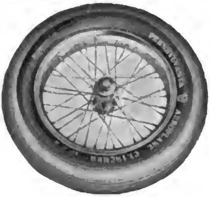
The **Aero Club of Buffalo** will soon have a shed big enough to house four to five full-sized aeroplanes and equipped with all the machinery necessary for the construction of any sort of flying machine at the Country Club polo field.

According to resolutions passed by the club at a recent meeting, anyone owning an aeroplane, or in fact flying machine of any sort, may make application to the club for the use of the aerodrome for storing the machine, and of the polo field for flying. If the applicant deserves the permission, the use of both will be accorded him free of charge.

For any inventor, who convinces the Aero Club that he has a feasible idea, will be granted the use of the aerodrome, its machinery, the aviation field, and moreover, if the inventor is financially unable to buy all of the necessary material, it has been intimated that assistance will be furnished him.

A. L. Pfitzner, whose monoplane is already at the Country Club, has consented

AEROPLANE TIRES



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40 "	145 "	" $1,150
25 "	95 "	" $950

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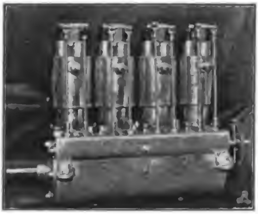

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to give the club the advantage of his experience and if necessary superintend the construction, together with the obtaining of the necessary aerial machinery.

MANUFACTURERS TO HELP.

A number of aeroplane engine manufacturing companies have sprung up in different sections of the country who, to get their motors before the public, have signified their intention of donating a number of up-to-date aeroplane engines to the club as soon as the aerodrome is finished, to be used by the club as it sees fit. These engines will be loaned to inventors who have been accorded the use of the building.

The **Purdue Aero Club** has been formed at Purdue University, Lafayette, Ind. The officers are as follows: Clarence W. Luhn, of Madisonville, O., President; Guy Wainwright, of Noblesville, Vice-President; R. C. Hoffman, of Argos, Librarian; G. O. Carothers, Secretary-Treasurer.

The **Pacific Aero Club** held its first meeting in the new quarters, 914 Pacific Bldg., San Francisco, on April 19. Miss Geneve Shaffer told of her balloon trip across the Bay. A. C. Pillsbury showed some of his remarkable flight and balloon pictures. Geo. H. Loose and Joseph Naston were others of the entertainers. Frank Johnson, who has been giving exhibitions in his Curtiss machine, was roasted unmercifully for his "pitiful" flights and called a "rank failure." A photograph was thrown on the screen of Johnson making a jump at Alameda.

"This is Johnson's record flight," it was announced. "He is 20 feet off the ground."

The "**Aero Club of Canada** has been duly incorporated by special act of the Council and Assembly of Canada by the Hon. Duncan C. Fraser, J. A. D. McCurdy, F. W. Baldwin, Hon. Wm. F. McCurdy, and others. There is no capital stock and no member of the corporation is liable for any debts or obligations of the corporation. "Certificates of Contribution" are provided for to be given any member who contributes toward the property or funds of the body. These Certificates entitle the holders to a proportional part of the proceeds of liquidation should such take place. The first meeting of the club was held on May 6th, at which six members were present.

J. A. D. McCurdy was elected president; F. W. Baldwin, 1st vice-president; H. Percy Blanchard, 2nd vice-president; Hon. W. F. McCurdy, 3d vice-president; J. A. D. McCurdy, secretary and K. J. McKay, treasurer. An architect is drawing plans for a club room building. The headquarters of the club will be at Baddeck, Nova Scotia.

John W. Mitchell, who is connected with the "Evening Star" in Washington, has entered the lecture field. His inaugural address was before the Army and Navy Club, where he gave an illustrated talk on the history of aviation. Mr. Mitchell is particularly well adapted for this work, as he has been closely associated with aeronautics for many years.

The Buyers' Guide

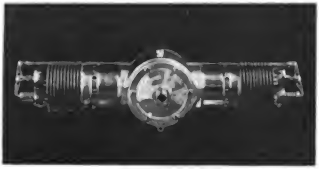
Trade Notes

TO OUR FRIENDS.—We would appreciate it very much if you would specify in writing advertisers that you saw the ad. in AERONAUTICS. This will help us, and eventually be of equal service to yourselves.

NEW BATES MOTOR.

Carl Bates has gotten out two sizes of a twin-cylinder air-cooled motor: 8-10 h. p., weight 25 lbs., and 20-25 h. p., weight 75 lbs. The 8-10 h. p. motor is the one which is now being installed by M. B. Sellers in his quadroplane.

The 8-10 h. p. model is built extra light, and is best suited for very light aeroplanes under 200 lbs. This size gives 80 to 90 lbs. thrust, with propeller direct connected.



Bates 2-Cyl. Engine

The other size, of 2 cyl., generating 20-25 h. p., is very suitable for aeroplanes under 400 lbs. This larger 2 cyl. motor gives from 150 to 180 lbs. thrust, with propeller direct connected.

These motors are of exceptionally high power, their efficiency and good cooling qualities being due to the extra large valves, auxiliary exhaust ports, and great cooling surface.

They retail from $325 to $575, according to size and equipment.

GREENE CO. STARTS PLANT AT ROCHESTER.

The Greene Co. has found business increasing too fast for its present quarters and has removed to Rochester, N. Y. A large concrete-block factory building, 60 ft. by 120 ft., has been secured, together with an assembling shed 40 ft. by 60 ft. A complete set of woodworking machinery has been installed.

The city of Rochester has given Dr. William Greene the privilege of using suitable parts of its property. The Elbridge motor has been finally selected as the most suitable. Four aeroplanes will be finished by the end of May and ten others have been laid out.

FOREIGN AEROPLANE PRICES.

The following are the prices which were asked for some of the machines shown at the recent English exhibition: Santos Dumont monoplane, $1,460; Bleriot "cross-channel" monoplane, $2,336; Antoinette monoplane, $4,866; Voisin biplane (E. N. V. motor), $3,796; Wright biplane (Wright motor), $5,839; Farman biplane (Green motor), $4,428; Farman biplane (Gnome motor), $5,450.

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SHNEIDER SELLS THREE MACHINES.

Fred Shneider has built and sold three Curtiss-type aeroplanes, one to the Elbridge Engine Co. and the other two out West.

GILL-DOSH CO. SELLING MACHINES.

The Gill-Dosh Co., Los Angeles, Calif., are now making the Gill-Dosh machines for sale. Immediate delivery is promised, and the price is $3,500. These machines closely resemble the Curtiss, and are beautifully finished. Brown silk rubber cloth is used for covering, and all metal parts are nickel plated. All metal joints are welded and steel is used in place of aluminum. American and British engines are fitted, in which weight has been reduced to 183 lbs. Bosch magneto is used. The company is also in a position to accept exhibition contracts.

The Boston Aeronautical Mfg. Co., of 21 Hawkins Street, Boston, Mass., which was organized last December, is building an aeroplane of its own type, and the initial flight is promised the latter part of May.

Frank H. Johnson, Curtiss agent in California, has bought a Hall-Scott motor, 41 h. p., which he is now installing.

ELBRIDGE CO. SALES.

Two Featherweight aeronautic engines of 60 h. p., weighing about 170 lbs. apiece, have been ordered by the Western Monoplane Company for early delivery at Spokane, for use in experiment with new models the company expects to market this season or next.

The Mathewson Automobile Company, of Denver, Col., expects to produce at least one biplane a month this summer, it is reported. The company is using for experiment at present the Elbridge Engine Company's four cylinder 60 h. p. Featherweight aeronautic motor, several of which were purchased early in the spring.

Flights over the great Mormon Temple at Salt Lake City, Utah, may be common before the summer is over. James W. Wade, of Salt Lake City, has built a plane which he is equipping with an Elbridge four-cylinder Featherweight.

Louis Waynal, of West Hoboken, has completed a new model of machine, according to his own ideas, which he will propel with an Elbridge engine.

WANTED.—Somebody to finance the building of a monoplane of Bleriot-Antoinette type, to be used for exhibition purposes; or, would like a position as operator of a machine for exhibition or any other purpose whatever. Will make reasonable terms. Address C. M. Hall, 406 Lincoln Inn Court, Cincinnati, Ohio.

Exchange and : : Forum : :

HOW TO ATTACH CLOTH.

107. In the May, 1910, number (which has already been mailed), you will find something on surfaces. One method is to dampen the cloth when you put it on, so that if it gets wet again it will not be baggy. The method used by one man here in New York is to spread glue over the front lateral beams. Start the cloth over the underside of the beam, pressing it into the glue, and tack it. You could run a strip of tape under the tack so as to prevent the head tearing the cloth. Then bring the cloth around the front edge and along the top of the ribs. Along each rib a strip of tape is tacked on top of your cloth the length of the rib.

You can run a wire through holes at the rear end of the ribs and then lace the rear edge of the cloth over this wire. You can probably get at a shoe store small brass eyelets and a punch. On the lateral extremities of the machine, you can lace the surface to the outermost ribs, either around the ribs or through holes in it. (See note on the Curtiss machine in the May number.) If the cloth is to be placed under the rib, you will want to wind around the front lateral beam in the reverse direction. By wrapping the cloth once around the beam and glue, it will be very strong.

Some other experimentors merely fit the cloth to the planes and lace all the way around. Of course, any slack in the cloth can be taken up.

TO EVADE WRIGHT PATENT.

I have just invented a new rudder for a flying machine that does not infringe the Wright Brothers' patent. It has been made public, and is for every one to use.

The rear horizontal rudder is hinged diagonally so that either of the two triangles thus made can be moved to a vertical position.

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A LETTER FROM DICK FERRIS.

March 3, 1910.

Editor, *Aeronautics*.

My dear Sir.—I am just in receipt of the March number of *Aeronautics*, and have read the two articles covering the Los Angeles aviation meet—one by Prof. H. LaV. Twining, and the other by Mr. Cleve T. Shaffer. Having personally conceived, promoted, and managed the first aviation meet in America, *without* "the blare of trumpets," I am not unlike the proverbial worm that turns when stepped upon in such a manner as I consider I have been, in both articles referred to.

It is only natural that petty jealousies should exist in affairs of this character, but I do not propose to allow, without protest, an exhibition of those same jealousies *by people who have followed in the wake of* one whom they now have seen fit to ignore, especially through the instrument of your most excellent journal.

In the spring of 1908 I purchased the world-famous balloons, the "United States" and "American," entered them in the international contest at Chicago, July 4, 1908, and again at St. Paul, July 18, 1908. When I returned to Los Angeles in the fall of the same year I brought with me these two bags, and after vainly soliciting the civic and commercial bodies of Los Angeles to foster a big balloon meet, using these two bags as a nucleus, I was compelled to send them away, in an attempt to cross the mountains, at no small financial loss. At this time aeronautics was in its infancy here, there was no aero club in practical existence, and everything that was done was of my own initiative and paid for out of my own pocket. As a sincerity of my efforts to have these balloons cross the mountains I erected at a cost of over $2,000 a hydrogen plant, and while these bags were being inflated Professor Twining, for the first time in his life, witnessed a real balloon, and asked permission of me to bring his school class into the grounds and lecture to them upon their construction and operation. Local interest was further augmented that same winter by numerous flights here of Roy Knabenshue with his dirigible, and several private flights of the "United States" and "American," which Mr. Knabenshue and Captain Mueller piloted.

To Captain Baldwin must be given the credit for the first balloon flight made in Southern California, and for the initiative awakening of anyone in this community to aeronautics.

That my balloons did not cross the mountains was due to most unfavorable weather conditions and incapability of one pilot who did have the opportunity. However, a week later, at my own expense (costing over $500) I inflated the "United States," fully equipped it, and with Captain Mueller as pilot, again made a successful attempt and succeeded in not only crossing the range, but the highest peak of the range, landing in the Desert of Arizona and covering a distance of 292 miles. By these continuous flights a general interest was gradually awakened and resulted in the forming of the Aero Club of California. When I left

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the city this club, through lack of support, disintegrated and was reorganized, to disintegrate again. During my absence I was in correspondence with Mr. George Harrison of the "Herald," to whom I outlined several plans for the winter of 1909 and 1910. Mr. Harrison being on the "Herald," gave it due publicity and in consequence the Aero Club of California again came into existence, but failed to apply for affiliation papers until the aviation meet was announced. Liking neither their business methods nor their treatment of myself, and being in ignorance of their sudden and hurried application for affiliation, I formed the California Aviation Society, Henry E. Huntington as president; Governor Gillett, vice-president; Willis H. Booth, president of the Chamber of Commerce, as vice-president and treasurer, and George B. Harrison as secretary. The directors consisted of United States Senators Perkins and Flint, General Otis, of the Los Angeles "Times"; M. H. Ihmsen, the business manager of the "Examiner"; Mr. T. E. Gibbon, the owner of the "Herald"; Mr. E. T. Earl, the owner of the "Express," and numerous other personages of equal importance. We quite naturally applied for affiliation, which, while not officially denied, we were told by Mr. Bishop, during his visit here, could not be granted owing to the priority of the application of the Aero Club of California.

I had been negotiating with Paulhan, Curtiss, Willard, Hamilton, Knabenshue, Beachey, and, in fact, every aviator of national and international reputation; finally closing contracts with Paulhan, Curtiss, Willard, Hamilton, Knabenshue and Beachey. I endeavored to form a company to finance the proposition, but was unsuccessful. I then went to Mr. Huntington and he subscribed $50,000 conditional upon the city of Los Angeles raising $50,000 more. I went to the Chamber of Commerce, but was twice turned down. I sought support in every direction without success. In the meantime the newspapers were most generous in their publicity, the "Examiner" being first and pre-eminent. Finally, through the good offices of Mr. Harry Chandler, of the Los Angeles "Times," I was able to meet in council several representatives of the Merchants' and Manufacturers' Association, to whom I outlined my plan. I was then invited to the banquet of the Merchants' and Manufacturers' Association and asked to address them. This I did, with the result that they referred the matter to their board of directors, who appointed a committee to favorably consider the project and co-operate with me in its execution. From that time on I acted as a member of that committee and in conjunction with them carried out every detail of my original plan. I personally selected the grounds, laid out the course, fenced off the field, posted the patrol lines, located the grandstand, concessions and all other details, and, in harmony with the committee, supervised their execution. I personally managed the field and flights every day of the meet, and extended to the press and photographers every courtesy within reason.

Mr. Bishop, president of the Aero Club of America, and Mr. Newton, of the New York "Herald," both of whom investigated everything very thoroughly, will, I am certain, vouch for the truth of the above statements.

The success of the meet was due to Paulhan's achievements, the newspaper publicity and the management in general. I might also add that but for my purchase of the balloons the "Dick Ferris" and the "City of Los Angeles," the only representation we would have had in that line was the appearance of Mr. Clifford B. Harmon with his "New York" and Mr. F. J. Kanne with his "Peoria."

I have no desire even now for credit, acknowledgment or publicity, but I do seriously object to being ignored and to the misleading articles above referred to by Mr. Twining and Mr. Shaffer. Trusting you will correct their misleading intent, I remain, with best wishes,

Yours sincerely,

DICK FERRIS.

P. S.—I thank you for running my cut, and enclose herewith a few editorials to substantiate my statements.

Ascensions

ASTERISK (*) DENOTES TRIPS OF 100 MILES OR OVER. BALLOONISTS ARE ASKED TO KINDLY SEND IN THEIR RECORDS.

TWO ASCENTS IN ONE.

St. Louis, April 8.—Miss Flavia Hadley, of Edwardsville, Ill., a daughter of ex-Congressman Hadley, and niece of Mrs. H. Clay Pierce, made her first balloon ascension to-day.

She ascended with a brother and two friends in an 80,000-cu. ft. balloon, starting from St. Louis, and landing in a potato patch near Collinsville, Ill., two hours later.

Peoria, April 9.—Frank Kanne, pilot, with George Fitch and E. E. Kester in the "Peoria." After going a short distance, followed by Eugene Brown, owner of the balloon, in an automobile, Fitch and Kester got out and Dr. Frank Baldwin and William Moon got in for a short sail. Finally, at dusk, a landing was made a mile out of town and the balloon moored for the night with the intention of going on again in the morning, but there was not enough lift the next day.

Jackson, Mich., April 11.—A. Leo Stevens, pilot, Frederick M. Alger, Wm. E. Metzger, E. W. Lewis and "Jack" Kraemer, in the "Cleveland," to near North Morenci, Mich., about 35 miles; duration 3 hours; altitude 8,500 ft.

Springfield, Mass., April 20.—A. H. Forbes, John Parker and William Hull, in the "Springfield," to South Hadley, Mass., about 17 miles.

Pittsfield, Mass., April 29.—Charles J. Glidden, pilot; F. P. Sibley and Wilhelm Heinrichs, the first sightless man to make an ascension, in the "Massachusetts," to Bennington, Vt. Distance 32 miles; duration 2 hours; altitude 4,500 ft.

LANDS BY LIGHTNING'S FLASH.

*St. Louis, May 2.—William F. Assman, in the "Missouri," to near Macomb, Ill. The landing was made in the rain by the aid of the flashes of lightning. Distance 129½ miles; duration 4 hours.

Pittsfield, May 6.—Charles J. Glidden, pilot; Prof. and Mrs. David Todd, in the "Massachusetts," to East Haddam, Ct. Distance 80 miles; duration 4 hours; altitude 6,400 ft. Saw Halley's Comet, moon and sun rise.

Pittsfield, May 8.—Chas. J. Glidden, pilot; W. Van Sleet, David Cullem, J. B. Benton, J. W. Flagg and V. Moisan, in the "Boston," covering about a mile; duration 38 minutes; altitude 1,700 ft. This was Mr. Glidden's forty-second ascent.

After rising to a considerable height the balloon was brought to earth ten minutes later, this being repeated twice so that each of the three pilots might handle the air craft separately on the short flights. All three flights were made within the city limits of Pittsfield.

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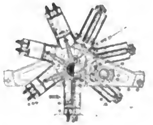

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Y. M. C. A. Flights.

At the West Side Y. M. C. A., New York, model contest on April 23 there were 20 machines out, and in the boys' class the winner was H. Ragot, a new entrant, with a Langley monoplane with two propellers. He flew 166 ft. 5 in. F. M. Watkins was second with 160 ft. 7 in. D. Grier, who is a cripple and has to walk on crutches, was third, with 148 ft.

In the men's class M. P. Talmage, with a small Wright biplane, starting from a catapult, made 121 ft., which is the longest flight we have had from a biplane at any of the contests. Carisi and Piceller, second, with 77 ft.

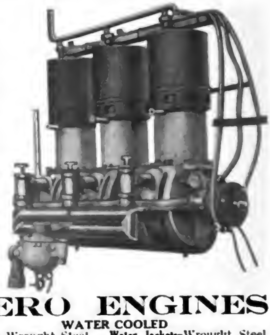
On Saturday, the 7th instant, was held the next contest in the Twenty-second Regiment Armory. There were about 17 machines entered. The winner in the men's class was M. P. Talmage, with his Wright biplane, making 124 ft. Mr. Piceller was second with 110 ft.

In the boys' class the winner was F. M. Watkins with a double-propeller monoplane, flying 175 ft. 7 in. D. Grier was second with 173 ft. S. R. Easter, third, with 160 ft. 6 in.

Notice was served on Chas. A. Stewart, director, that Henry Ragot would not compete until the government had passed on his application for a patent for flexing wings.

This contest was the end of the Durant cup, Watkins now having three legs on it and it becomes his property. A new cup has been offered by M. P. Talmage which will be competed for the first time at the next meeting.

LIGHT WEIGHT



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This is the age of speed. If people can travel between any two places in an airship in one-half the time required by the fastest express train and for less fare, safety and comfort being equal, which will they be most apt to use for their journeys?

The great commercial possibilities of this airship lie in the fact that it can transport passengers at great speed with absolute safety and in perfect comfort.

The Company expects to prove most convincingly that it can do this; and, if it can, it should be easily able to secure the bulk of the high-priced travel of the country, the people who are willing and able to pay for the hours of time saved them in making trips here and there.

Nature has given some birds the power to fly through the air at over 200 miles an hour. The swiftest beast that runs along the ground cannot go half that fast. And so will the future prove that aerial travel is much safer at 200 miles an hour than on railways at half that speed.

It costs about one hundred million dollars to build a railroad from Chicago to New York. There is the right of way to be paid for, tracks, bridges, etc., to be built. With the establishment of aerial travel it is altogether different. The air is free to any one. An aerial route requires no purchase of right of way, no tracks, no bridges. There is no costly rock-work, no mountains and rivers to be tunnelled. In one case the cost is millions, in the other nothing—not a dollar. All this company has to expend is the thought of determining the route, and it is instantly ready. It should readily be seen why one dollar of airship money should earn as much as one hundred or more dollars of railroad money.

The great possibility for enormous profits presented by a corporation owning swift-flying, passenger-carrying airships, after a few trips have shown what they will do, makes this Company's stock promise to be the greatest profit earner the world has ever known. It is futile to attempt to foretell how big the dividends will be, or to what figures the price of the stock will advance, for the commercial possibilities are incalculable.

Aeroplanes are only fair-weather aircraft suitable for sport and professional exhibitors. They do not possess the slightest commercial possibilities. Dirigibles offer no advantage over a milk train for speed, and there is not the slightest hope of these balloon-sustained airships ever becoming a factor in carrying passengers as a matter of regular every day business.

No airship which does not possess the essential requisites of safety, speed and positive action in all weathers can hope to do a general passenger-carrying business every day in the year, and that is where the big money is to be made. This is the first airship planned with the purpose to meet the necessities of actual conditions. All others have been but experiments that have paved the way and positively demonstrated that the air has a sustaining power in itself much greater than people thought it had. The only force that will do without fail that which must be done in aerial navigation is that of power under absolute control because all action, be it ascension, suspension, balance or propulsion, must be forceful and positive.

It is essential that the motors should not be connected. They should be able to be operated independently of each other or all together, as desired. An accident might happen to a single motor, or to several of them. But where there are many independent motors, an accident to one or two would not perceptibly affect the operation of the airship, and the damage, if not too serious, could be remedied while the airship was in flight at a slightly reduced speed.

It is pertinent to ask what is this new airship and what will it do?

First. It is a power sustained and propelled airship, with power controlled equilibrium, built on new applications of the helicopter principle; but instead of only one motor, it has many, acting in unison or independently, as desired. Its action is forceful, positive and instantaneous.

Second. It will ascend in the air from any surface, even from water, in which it will not sink. It will remain stationary in the air or travel at the rate of 150 miles per hour and upward under any kind of weather conditions, and with the usual convenience and protection from weather to passengers afforded by railway cars. It will go forward or backward, ascend or descend, shift its direction under instantaneous control of the pilot. It has a natural balance, also automatic control, hand control, hand and automatic in combination, thus making capsizing impossible. The weight is neutralized by making it a live weight and self-sustaining through the motive power. It cannot fall, even if all the motors are instantaneously disabled, as the plane, the area of which extends over car and propellers, and which is used as an additional precaution for safety, operates as a parachute and makes the descent to the ground slow and gradual, with the place of alighting without a jar under control of the pilot.

Continental Aircraft & Transportation Company

In other words, it is a simple, safe, speedy and commonsense, power-controlled airship with the every-day needs of commercial uses fully provided for, and capable of departing from the starting place every day promptly on the minute scheduled.

An airship of 3,000 horse power under the plans contemplated will carry 50 passengers and crew, figured on an average weight of 200 lbs. per person, and 3½ tons of gasoline and oil. This equipment is sufficient for a continuous flight of over 1,000 miles. Plans permit construction in all sizes from 50 horse power upwards. In other words, for from two or three persons carrying power up to any reasonable number.

No matter what the future may bring forth in airships, there are certain fundamental principles that all airship builders must consider. The power of ascension, suspension, propulsion, balance, neutralization of weight, operation in all weathers, and instantaneous steering control are the main factors. These features are amply protected by patents so strong, so broad, and so effective, that they are basic patents which all newcomers before using must come to this Company to be licensed, no matter what changes they may make in certain details of their operating machinery or style of airship, just as the automobile manufacturers are obliged to do in connection with the Selden patent.

The capital stock of the Continental Aircraft and Transportation Company is $2,000,000, full paid and non-assessable, with shares of the par value of $100 each.

The Company is offering a limited amount of treasury stock at the price of $10 a share to raise the funds to build an airship and start an aerial route in order to attempt to prove to the public that its airships will do everything hoped for them.

No Officer of the Company is drawing a cent of salary and every dollar received from sales of treasury stock will be deposited to the Company's credit in a national bank and expended only for legitimate expenses incurred in building and proving what the airship will do.

The charter and by-laws are such that every stockholder is safeguarded in receiving his full pro rata benefit of all money made by the Company, be his holding one share or ten thousand shares. All the legal papers in connection with the Company's incorporation have been most carefully prepared with this purpose in view.

On the route between Chicago and New York, an airship carrying 50 passengers, can make the round trip daily, and, with the fare placed at $20 for one way, each airship should earn not less than $1,000 a day after deducting all expenses. On shorter distances between other cities, each airship on these routes could make more trips a day, with the relative earning power about the same amount a day, $1,000. With a hundred airships in operation in various parts of the country, the company should make at least $100,000 a day net profit, and, when one stops to think of the enormous number of people who are traveling, he can appreciate the fact that 100 airships will not carry the passenger traffic of the United States, or even a very small part of it.

It is not unreasonable to expect that the stock bought at the present low price of $10 a share may be receiving dividends equal to one hundred per cent a month, or even twice that much.

It is said that opportunity to make a fortune knocks once at every man's door. If not seized when the chance offers, opportunity passes by, perhaps never to return. This is the opportunity of a lifetime. Don't let it pass by without grasping it, at least for a small amount.

You should estimate the future by the past and consider if this airship promises to do for its stockholders what the telephone did for those who had faith and courage to buy telephone stock before a single line was built; The man with faith and courage bought at 50 cents a share and later had the opportunity to sell at $1,000. The doubter, the man who waited too long, lost a fortune.

Those who wait to see this airship fly before buying any stock may find their timidity, their lack of faith, has lost them a fortune. The losses that one feels the most, those that linger in one's memory for all time, are the profits he might have made, had he only had the courage to accept the opportunity when offered. An undertaking of this nature is almost like the discovery of a new world. The discoverers, the daring stockholders, will practically own it and gather in the great harvest of golden profits as the just reward of their courage.

CHARLES JOHNSTON
Instructor and Golf Club Maker

Mr. Crafts W. Higgins, Secretary
Continental Aircraft & Transportation Co., Chicago, Ill.

Omaha, Neb., April 21, 1910

Dear Sir:

Your letter and circular were duly received and after reading the same have decided to invest a little amount on your proposition. Enclosed find my check (No. 90) for $100.00 for which kindly send me certificate of stock in "Continental Aircraft and Transportation Company" to the value of that amount.

Here's hoping it will be a winner for us all, as I feel sure that someone is going to get there pretty soon, and I am willing to take the chances that you have done so.

Yours very truly.
(Signed) CHARLES JOHNSTON.

The above copy will show you there are some who will buy stock and take the chances. Address all applications for stock to L. P. HOOPER, 116 Nassau St., New York, N. Y.

"AERONAUTICS" PERMANENT EXPOSITION.

THE magazine has moved into its new and commodious quarters at 250 West 54th St., and a start has already been made on the Permanent Aeronautic Exposition, as fully explained in the May number. We have been disappointed, but not surprised, to find that the exhibitors were so crowded with work that some of them have had to postpone the placing of their material.

All the manufacturers have become enthusiastic over the plan, and prospective buyers are commending it highly for the practical service it is giving. Wm Youngs & Bros., lumber dealers, have entered into the field with a line of fine wood in various shapes and weights, and even silver smiths, the Mauser Co., have put in a display.

We want to hear from every constructor and manufacturer, and urge upon everyone interested to visit the exposition.

Exhibitors.

Hartford Rubber Works Co., Tires.
Wittemann Bros., Gliders and Supplies.
Warner Instrument Co., Aerometer.
Requa-Gibson Co., Motors and Propellers.
Elbridge Engine Co., Engines.
Pennsylvania Rubber Co., Tires.
C. E. Conover Co., Cloth.
Edwin Levick, Photos.
Philadelphia Aeroplane Co., Motors, etc.
Roebling Co., Wire Cable.
Victor L. Brunzel, Varnish.
El Arco Radiator Co., Radiators.
J. A. Weaver, Wheels, etc.
Whitehead Motor Co., Motors.
Greene Co., Propellers and Parts.
Bosch Magneto Co., Magnetos.
Auto-Aero Supply Co., Supplies.
R. I. V. Co., Ball Bearings.
J. Deltour, Bamboo.
J. S. Bretz Co., Magnetos, Bowden Wire.
Aero Supply Co., Supplies.
Chas. E. Dressler, Model Maker.
Wm. P. Youngs & Bros., Lumber.
Mauser Mfg. Co., Trophies and Medals.

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Owing to the lack of space it is absolutely impossible to index all the flights of aeroplanes, the balloon ascensions, news and trade items, the monthly reviews of affairs abroad, etc., etc. The following list barely covers the principal articles.

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NOTE.—It is with regret that in this issue I am obliged to leave out several very interesting and valuable contributions for lack of space. I am still nursing the fond hope that soon I shall be able o enlarge the magazine; but, between ourselves, this publishing business isn't what it's cracked up to be. Why not help me by recommending the paper to your friends and acquaintances? L. JONES.

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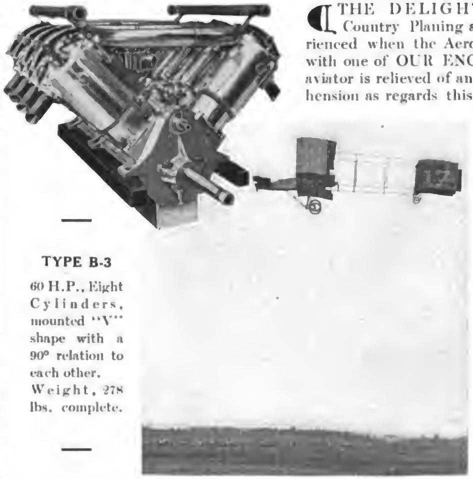

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Balloon "St. Louis III"—speed record of America—Lambert, pilot; Von Phul, aide
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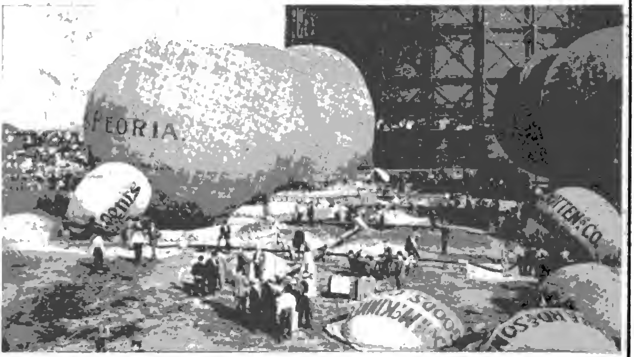

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AERONAUTICS

THE AMERICAN MAGAZINE
OF AERIAL LOCOMOTION

VOL. 7
NO. 1.

JULY, 1910

25
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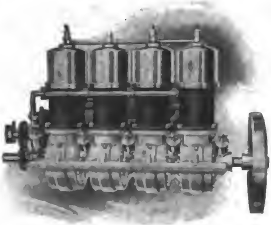

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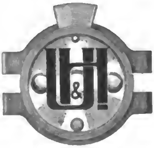

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Aeronautics

Gliding as a Sport

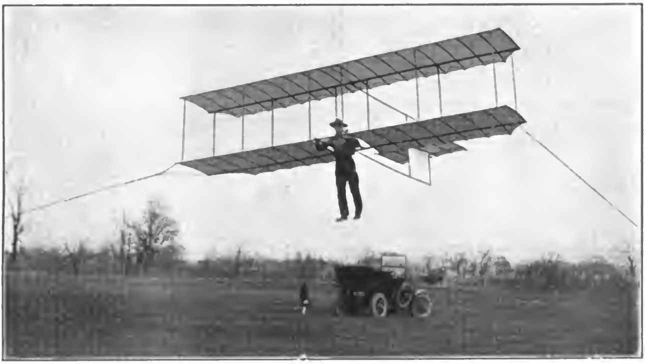
By Hiram Percy Maxim

MY object in undertaking aeronautical experiments has been purely from the standpoint of sport. In this I must say that I have not been disappointed. I and my friends have certainly found in it more outdoor sport and interest than in anything else I have attempted in the past. Up to the time I sprained my ankle by a foolish attempt to beat a previous record, I made flights several times a week, or whenever the breeze was fair.

There is not the slightest doubt that "flying" is the great coming sport. From my experience I believe that the younger class of people who enjoy outdoor life will buy gliders and motor planes, and arrangements will be made so that the machines can be kept and used at the country clubs and the golf clubs, to one of which most of us now belong. At these country and golf clubs there is most always a corps of servants to look after a machine, and do the necessary repairing and refitting. In addition, these clubs always have splendid grounds upon which to practice flying. There are always hills for gliding, and in most cases there are large areas free from trees and similar obstructions. A great advantage is that in clubs of this nature the general public would not have access, and one would be able to begin his practice, which is always very clumsy, without having the invariable "gallery" of hangers-on, which is unavoidable at any public field.

The illustration shows my Wittemann glider, which is really a very superb piece of work, being towed by a man against a breeze which probably was about fifteen miles per hour. Towed in this manner, the machine rises beautifully. It is absolutely steady, and when one gets thirty or forty feet above the ground there is usually found enough wind to keep one aloft without the tow having to advance.

After becoming acquainted with the machine and the balancing and controlling, the tow lines are left off, and flights are made by running with the machine down a hill against the wind. After running about ten or fifteen feet a lift on the front of the machine carries one straight up into the air, and it is possible to coast down to and beyond the bottom of the hill, very similar to one coasting down a hill on a toboggan in the winter time. The greater the skill and the better the breeze the farther the coast. Indeed, I am wondering if with enough skill and breeze it would not be possible to actually keep aloft indefinitely. If this were possible it certainly would open up great things.



The accident which I was unfortunate enough to suffer was due to carelessness on my own part. For the benefit of those who may also be so intoxicated by this most fascinating of all sports as to act foolishly, my experience may be worth noting:

I had made several very successful flights, being towed by an automobile against a breeze which did not amount to more than five or six miles per hour. Just at sundown I decided to make a new form of bridle hitch, and by the time I had completed it it had grown quite dark and the wind had fallen just short of a flat calm. Of course, it was no time to attempt to glide, and had it not been for the enthusiasm which this sport arouses I would have stopped. I told the driver of the automobile to give me as near 20 miles an hour as he could judge in the dark. At the rear of the automobile we had fastened a 15-ft. length of 2-in. by 4-in. spruce. From the ends of this two tow lines were run, one to each end of the glider. After starting I rose quickly to about 50 ft., and in the excitement the driver of the automobile veered slightly from the true course. This meant considerable variation at the ends of the 15-ft. timber at the back of the car. The result was that my starboard tow line became very taut, while my port line became slacked. This pulling on one side immediately tipped the glider up. I corrected this, but in the swinging sideways, due to the elevation, it suddenly brought the taut line to the other side. This gave me a sudden reversal of the dip, which was of such terrific magnitude that I could not begin to control it. The result was that the planes actually tipped up until they were standing straight up and down in the air. The machine then, of course, dove sidewise, and the result was a sprained ankle, knee and hip joint for the too enthusiastic writer.

The moral is not to attempt these things unless it is light enough for the automobile to hold a straight course, and also unless there is a little breeze. In the free flights down hill there is practically no danger of accident to anyone having ordinary dexterity.

Can a Man Fly With Wings?

By H. La V. Twining

[Continued from the June Number]

President Aero Club of California; Head of Physics and Electrical Engineering in the Los Angeles Polytechnic High School; Author of "Wireless Telegraphy," Etc.

A superficial observation of the bird brings out the following facts: The wing is attached by its front edge forward and above the center of gravity of the body of the bird; and the center of gravity of the body and the center of figure of the two wings are situated in nearly the same vertical plane. This relation is fundamental.

The pectoral muscles that lower the wing are attached to the front edge of the wing near the body, and the elevator muscles are found underneath the large pectoral muscles. They send a tendon up around the hinged joint between the wing and shoulder. This tendon attaches to the upper front edge of the wing, nearer the joint than does the lower muscle. The remarkable fact to be noticed is that the elevator muscles are very small and weak compared with the depressor muscles. The muscles that elevate and depress the wing therefore oppose one another. This makes a lever of the third class of the wing, whereby power is converted into speed, forming a lever similar to the arm, at the elbow.

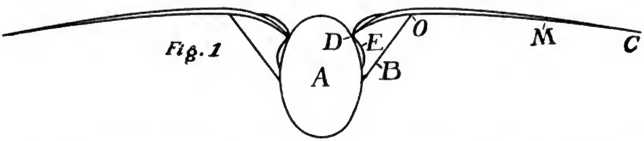


Fig. 1

In Fig. 1, let A be the body of the bird, B the large pectoral muscle, D the hinge joint, and E the elevator muscle. In this lever, for striking the air D is the fulcrum, E and B the power, while C is the long arm to receive a long and swift sweep. Consequently, a short and powerful contraction of the muscle B resulting in a small movement at O throws the end of the wing C, through a long distance quickly. Since the reaction of the air upon the wing C is proportional to the square of the speed with which it is driven, we can see at once the advantage of this arrangement. Here is a factor that makes the length of the wing much more effective than its width. In fact the wing must be narrow and long in order to develop the greatest reaction, and it is not a mere matter of the relation between square surface and weight with which we have to deal. The less the surface and the shorter the wing, the greater the speed with which it must be driven in order to develop the same reaction. The wider the wing and the shorter it is, the square surface remaining the same, the faster it must be driven in order to develop the same lift. The longer the wing, the slower it can be driven in order to develop the same lift. In fact, its speed will vary inversely as the square of its length and inversely as its width. It is readily seen that it is the outer end of the wing that really does the work. In fact, the inner part of the wing can be entirely cut away, and it will remain just about as effective. Either in soaring or in flapping flight, it is the end of the wing that is the most effective.

The next feature to be noted is this: In order to obtain support a 10-lb. turkey must develop 5 lbs. reaction under each wing.

We shall suppose that this 5 lbs. reaction to exist at the center of pressure which we shall suppose to be two-thirds of the way out towards the tip, at least. Since the pressure increases with the square of the distance from the center of motion, this is very nearly true. The turkey that I mentioned before has a wing spread of 5 ft., with an area of 3 sq. ft., and an average width of 7½ in. This would locate the center of pressure about 20 in. out from the shoulder. The pectoral muscle that depresses the wing is attached about 1½ in. from the shoulder. Here an important point presents itself. In a lever, the power times the power distance equals the weight times the weight distance. In Fig. 1, if we regard the power applied at O as represented by X, D being the fulcrum, the power distance is OD. The reaction, which is equivalent to the weight, is at M and hence MD is the weight distance. OD is 1½ in., MD is 20 in. and the reaction at M is 5 lbs., hence (X) (1½) equals (20) (5). Solving X, equals 66⅔ lbs.

If the above analysis be correct, then the turkey must pull with a force of 66⅔ lbs. on each wing in order to fly, if it is continuously to support its weight. That is to say the turkey must maintain a pull of 133⅓ lbs., while flying or soaring, provided it is continually supporting its weight.

This means the expenditure of .24 h. p. in order to rise 1 ft. in 1 sec. or .12 of a h. p. to rise 6 in. per sec.

This is preposterous. A man's rate of work is about .1 h. p. If a man climbs a mountain, rising at the rate of a foot per second he has to be a hustler. This requires .27 h. p. In fact to go upstairs at that rate will take the breath out of an ordinary man. If he climbs at the rate of 6 in. per sec. he will be doing pretty well. This is .13 h. p. A 10-lb. turkey is not very fond of flying. A turkey buzzard, however, weighing 4 lbs. and having a wing expanse of 3 ft. and an average width of 8 in. flies and soars with ease. Each wing is 1½ ft. long. This gives an area of 1 sq. ft. per wing, or 2 sq. ft.

In this wing then we have: (X) (1) equals (2) (12); the pectoral muscle attaches 1 in. from the shoulder; and ⅔ of 18 in. is 12 in.: a 2-lb. reaction is necessary at M. Consequently X equals 24. Hence the buzzard must pull 24 lbs. on each wing or 48 lbs. in all. This gives the turkey buzzard about .1 h. p. to rise 1 ft. per sec., whether soaring or flying.

An ordinary man weighs 37½ times as much as the turkey buzzard, and if the buzzard is expending energy at the same rate that a man expends energy, then it has to burn as much fuel as a man in a stove 1/37 as large. This does not look good to a reasonable mind, and there must be some mistake in it.

If, on the other hand, the fulcrum is not at D, Fig. 1, after the resistance of 2 lbs. is developed at M, but at M instead, then we have an entirely different proposition. In a lever the fulcrum is at the point of support when the weight is lifted. When the bird is lifted by the reaction of the air, it is resting on the center of pressure of the wing. Hence the fulcrum ought to be found at that point. If this supposition be true, then the weight arm and the power arm are very nearly equal. MD is the weight arm and MO is the power arm. Then (20) (5) equals (18.5) (X) whence X equals very nearly 5.4, in the case of the turkey. In the case of the buzzard X equals 2.18 lbs.

This shows that a bird in flying has to lift practically its own weight only. This looks more reasonable. This represents .02 h. p. for the turkey and .008 h. p. for the buzzard in rising 1 ft. per sec.

There are losses to be taken into account here, of course, that would increase this.

But the question is, is the fulcrum really out at the center of pressure on the wing? Experiment only can determine it, although to suppose otherwise does violence to the judgment.

In a recent experiment results were obtained, which point clearly to the conclusion that the fulcrum is really out at the center of pressure.

EXPERIMENTS WITH MACHINE.

Last summer I constructed a machine built on the principles of bird flight as I see it. The machine weighs about 100 lbs. My weight is 140 lbs., making 240 lbs. The wings are manually operated by levers, which attach to the front edge of the wings through links, giving a leverage of four to one. The links attach 3 in. from the shoulder of the machine. The point of attachment is thus located forward and above the center of gravity of the body and machine. The machine is mounted on three bicycle wheels. I had hoped to cause it to run along the ground when the wings were made to oscillate, and after getting up a speed of 8 or 10 miles per hour on the ground, I hoped to be able to develop enough lift to take it off the ground. But nothing of the kind happened. I could beat the wings some 52 half beats per min., and develop enough reaction to take the wind out of me in about 10 sec. The wings had 30 sq. ft. each of surface and were some 10 ft. long by 4 ft. wide at the widest part. It took only a one pound and a half pull to move the machine along the ground with myself in it.

We suspended the machine by a block and pulley attached to a spring balance, and with myself in it, it weighed 240 lbs. By beating the wings down the machine rose 2 in. and gave a 120-lb. lift on the scale. On the up stroke the machine rose slightly and developed forward motion.

Now if the fulcrum is at the shoulder we have the following: OD, Fig. 1, is 3 in., DM is 80 in., hence (3) (X) equals (120) (80) or X equals 3,200 lbs. That is it would take a pull of 3,200 lbs. at O to develop a reaction of 120 lbs. at M on both wings in order to lift the machine. It would take one-half of 3,200 lbs. or 1,600 lbs. to develop 60 lbs. at M in order to lift half of the weight.

As a matter of fact I was lifting half of the machine by making a 200-lb. pull at O. If the fulcrum were at D, I should have been able to have developed only a 9-lb. lift instead of 200 lbs. lift.

By an 18-in. motion between the hands and feet, the tip of the wings can be swung through 10 ft. The above results seem to indicate that the fulcrum is out on the wing, and if that is the case, there is no reason why flight with wings should be impossible.

There are other factors though that might favor or prove unfavorable to the above conclusion. If the wing is wasteful of power, or if the power is applied in a very disadvantageous manner, it might still be impossible.

[To be continued]

New Prizes

Curtiss' Flight Gets New Prizes.

The Albany-New York flight of Curtiss immediately had its effect on prize giving. For the past two years newspapers have been asked to offer prizes, but they seemed very cold. Mr. Curtiss' flight seemed to work wonders over night.

World-Post-Dispatch $30,000.

At the Hotel Astor banquet the $30,000 prize of the New York *World* and the St. Louis *Post-Dispatch* for a flight from New York to St. Louis, was made public. Conditions have not yet been named, as the prize will, it is expected, be awarded under the rules to be formulated by the national federation at its convention on June 22.

N. Y. Times-Chicago Post Prize.

Another big prize of $25,000 was announced at the Astor dinner by the New York *Times* in conjunction with the Chicago *Evening Post*, for a flight between Chicago and New York, about 960 miles. Other prizes will undoubtedly be offered by cities along the route. Conditions for this also will wait for the national federation which, no doubt, will in the future control all events in this country of local or national character.

Missouri Raising $10,000 Prize.

Only a few thousand dollars is needed to complete the prize of $10,000 which will be offered in July for a trans-state flight in Missouri, the start being St. Louis and the finish Kansas City. The prize will be open for competition the week of July 18, according to the present plan.

It is further planned to allow five stops at as many controls, if more than one entry is received and to start all at the same time on a day to be specified by an impartial committee, which will take weather conditions and the preparedness of the contestant into consideration. Three days will be allowed for the journey.

The course will probably be along the Wabash railroad to Kansas City, a distance of about 270 miles.

Edwin Gould Prize.

Edwin Gould has offered through the *Scientific American* a prize of $15,000 for the production of the best successful aeroplane equipped with two or more motors and two or more propellers, so that any power plant can be used either individually or in conjunction with the other or others. This prize is to stimulate the invention of a "safe" machine. The conditions will be announced later.

Evening World Trophy.

The Evening *World* has offered a perpetual challenge trophy in silver to the amateur making the longest continuous flight in any year. Each winner holds the cup for a year. The complete rules will be formulated and adopted at the national convention on June 22nd.

Scientific American $100 Prize.

The Scientific American offers $100 in three prizes to be awarded to the inventor who gives the best account of how he conceived his invention, how he developed it in actual practice and how he succeeded in getting it. This sum is divided $50, $35 and $15, open to August 15th, 1910. For rules address Scientific American, 361 Broadway, New York.

$20,000 for Race Between Wright and Curtiss.

The Aero Club of Washington has offered $20,000 to the Wrights for a flight from New York to Washington if they will enter one of their machines against a Curtiss.

J. P. Erie, of Denver, Colo., has been experimenting with a glider in which the upper surface is some 8 ft. greater in spread than the lower. This, he says, lends greater stability. There are triangular "wing tips" from the upper to the lower surface, at an angle of about 45 deg. from the horizontal.

First College Aero Degree.

The first degree to be awarded by an American University for work in Aeronautics was granted at the Columbia University commencement this June, when Grover C. Loening received the degree of Master of Arts. Loening's thesis, entitled "An Investigation of the Practice and Theory of Aviation," is about forty thousand words long, and is a complete study of the aeroplane, from practical as well as theoretical standpoints. Twenty-six large plates accompanying the thesis, and show details of the various successful aeroplanes.

How to Make a Propeller ::

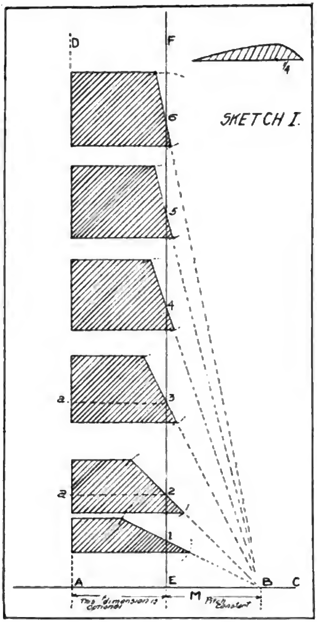
To make a propeller templets for a uniform pitch propeller, using the Drzwiecki method, one follows the plan below, which has been adapted from the French of M. Drzwiecki's book. You can take the pitch and diameter you have figured out yourself, or take the diameter and pitch of such propellers as mentioned in AERONAUTICS.

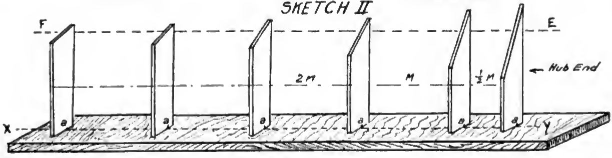
First obtain the pitch constant M, i. e., Pitch divided by two times 3.14159265, or roughly, pitch divided by 6-2/7, or $\frac{P}{6}$ as it is near enough.

Having obtained your pitch constant M, lay it out on the horizontal line AC (sketch I). This will give you the distance EB. Draw a line EF perpendicular to AC from the point E. On this, starting from E, mark off lengths equal to ½M, M, 2M, 3M, 4M, 5M, giving you the points 1, 2, 3, 4, 5, 6. Lines are then drawn through these from the point B.

From these points 1, 2, 3, etc., with a radius equal to ¼ of the specific width of the blade (This width is the width of the proposed propeller at *that point* and may be any width you choose.) arcs are drawn to intersect the lines 1B, 2B, etc., on the same side of the vertical line EF as the point B. Lines parallel to AC are then drawn through these points of intersection of the arcs with 1B, etc.

The same procedure is carried out on the other side of the vertical axis EF, with the same centers, but with a radius equal to ¾ of the specific width and lines parallel to AC are again drawn through the points where these arcs cut the lines 1B, 2B, etc.


SKETCH I.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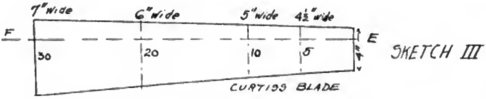

SKETCH III

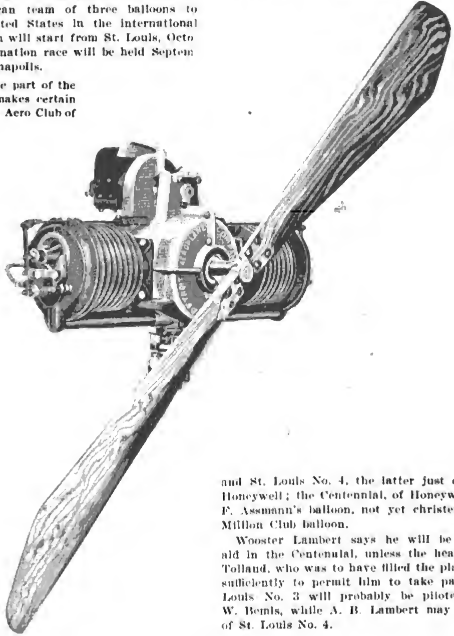
The fourth sides of the templets are bounded by the vertical axis AD drawn perpendicular to AC at any optional distance from the point E. Drzwiecki used narrow blades about one-tenth of the diameter wide.

The templets thus obtained are cut out of thin pieces of wood and the points "a" are marked upon them at a distance of ¼ their width. The ¼ of width point "a" is measured from the front edge of the blade, i. e., the same side as axis EF is on and directly under the axis EF. This is where the thickest point of the blade comes, or the shank in a metal blade, and is near the front, to be at or in front of the center of pressure. (See sketch I.) These templets are numbered as in sketch I and fastened to a board with their plane perpendicular to the board. All the points "a" are placed on the axis "xy" in sketch II. These templets are spaced ½M, M, 2M, etc. The axis "xy" is directly under EF.

St. Louis Active in Ballooning.

Charles F. Wenneker, president of the Million Club, has placed an order with H. Eugene Honeywell for a balloon of racing size, which S. Louis Von Phul will pilot in the elimination race to select the American team of three balloons to represent the United States in the international balloon race, which will start from St. Louis, October 17. The elimination race will be held September 17 from Indianapolis.

This action on the part of the Million Club now makes certain five entries from the Aero Club of St. Louis in the elimination race, and gives the club a chance to win all three places on the American team. It is not expected that any other club will enter more than three balloons in the elimination race.



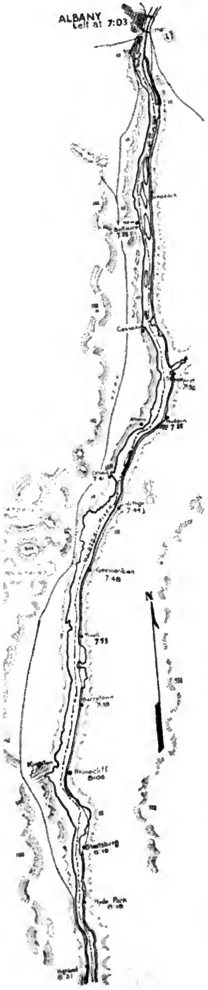
New Engine of Detroit Aeroplane Company

These templets, of course, may be curved to form segments of a circle. It will be seen that the inclined edges of the templets form a guide to determine the shape of the blade of the propeller.

For illustration, take a Curtiss 6-ft. diam. and 5-ft. pitch propeller, 4 in. wide at hub, 7 in. at extremity. (Sketch III.) One blade is 3 ft. from the center of the hub. Draw a line 3 ft. long. Pitch is 60 in. One-sixth of 60 is 10 in. Lay off 10 in. on line EC. Then take distances, 5"=½M, 10"=M, etc. This gives only four templets, due to the fact that Curtiss' propeller is shorter than Drzwiecki's standard length. (According to Drzwiecki, a propeller with a 5-ft. pitch ought to be about 100 in. long.) This will duplicate, however, a Curtiss' propeller, as it is not of uniform pitch.

The balloons piloted by members of the St. Louis club will be the club aerostats, St. Louis No. 3 and St. Louis No. 4, the latter just completed by Honeywell; the Centennial, of Honeywell; William F. Assmann's balloon, not yet christened, and the Million Club balloon.

Wooster Lambert says he will be Honeywell's aid in the Centennial, unless the health of J. W. Tolland, who was to have filled the place, improves sufficiently to permit him to take part. The St. Louis No. 3 will probably be piloted by James W. Bemis, while A. B. Lambert may be the pilot of St. Louis No. 4.



Curtiss Wins :: $10,000 Prize ::

Flies From Albany to New York

THE FLIGHT IN FIGURES.

Distance, course, Albany to Camelot, 71¼ miles.

Distance, course, Albany to Spuyten Duyvil, 128 miles.

Distance, course, Albany to Governor's Island, 142½ miles.

Distance, straight line, Albany to Spuyten Duyvil, 122.8 miles.

Distance, straight line, Albany to Governor's Island, 136.34 miles.

Speed per hour, by path, Albany to Spuyten Duyvil 50.52 miles.

Total time in air, 2 hours, 50 minutes.

Elapsed time, Albany to Spuyten Duyvil 2 hours 32 minutes.

Gasoline used, 15 gallons. Oil used, 2 gallons.

Weight of machine, Curtiss aboard, with tanks filled, etc., about 1,000 pounds.

Distances compiled for AERONAUTICS by Mr. Williams Welch, Chief Draftsman, Office of the Chief Signal Officer, U. S. A.

Sunday, May 29. The Hudson-Fulton Celebration of last October was made complete only today when Glenn H. Curtiss, bearing a letter from the Mayor of Albany to the Mayor of New York, won the New York *World's* $10,000 prize for the first man to fly from Albany to New York, with an allowance of two stops on the way. Curtiss made but one stop within the conditions of the prize.

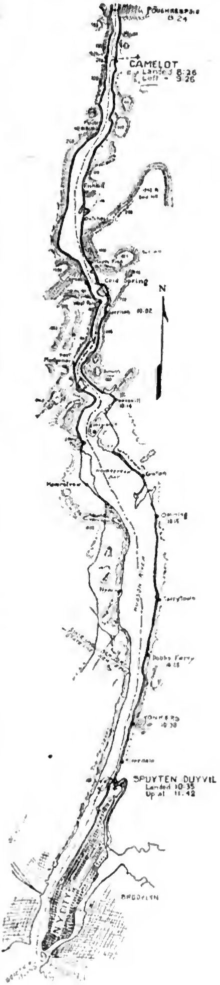
After waiting several days for favorable weather, the start was made from Van Rensselaer Island in the Hudson River, at Albany, at 7:02 a. m. Circling over the lower part of the city, a minute later he crossed the line and was on his way to New York.

At New Baltimore, a special New York Central train bearing Mrs. Curtiss, Mrs. J. S. Fanciulli, Augustus Post, the official observer; J. S. Fanciulli, Henry Kleckler, Mr. Curtiss' Chief Engineer, a committee from Curtiss' home town of Hammondsport and the newspaper men and photographers caught up with the aeroplane and kept pace with it as far as the first stop, near Poughkeepsie.

The New York Central Railroad runs close along the river as far as Spuyten Duyvil and the passengers could see practically every foot of Curtiss' flight.

FIRST LANDING AT POUGHKEEPSIE.

On down the Hudson without a skip of the engine, high over the Poughkeepsie Bridge he came, landing for gasoline and oil at Camelot, a few miles below Poughkeepsie at 8:26, after flying 71¼ miles in 83 minutes, a speed of 51.5 miles an hour. The machine was in perfect condition, save for one stay wire which vibrated too much. This was remedied. A farm had previously been selected here and a red flag hoisted to enable Curtiss to make out the place.



Curtiss Passing West Point *Pictorial News Co.*

At 9:26 Kleckler, who had come down on the special train, started the propeller and Curtiss was off again on the second half of his journey.

Passing through the Storm King Mountains, where the crew of the Hendrik Hudson are said to play at bowls on stormy nights, Curtiss met with his only difficulties in the way of air currents. Suddenly the air seemed to give way beneath the machine and it dropped like a plummet a few feet in the descending current.

"At Storm King," Mr. Curtiss told AERONAUTICS, "I was flying high through the narrow gap in the mountains and I caught the down current on one side more than on the other, and I dropped thirty or forty feet very suddenly and sideways. I had to shift the front control to get straightened out."

LANDS IN NEW YORK.

Making a wide detour toward the Jersey side of the river, he flew over the railroad bridge spanning Spuyten Duyvil Creek and landed at 10:35 on an open field on Manhattan Island. His oil tank was leaking and, though the conditions were fulfilled; he wanted to make the feat complete by continuing on to Governor's Island off the southern part of New York City, so he deemed it best to fill up with oil to make sure of the accomplishment. From Camelot to Spuyten Duyvil is 56¾ miles, time 69 minutes, or an average of 49.347 miles an hour, somewhat slower than the first half.

This field sloped steeply to the creek and there was no room to get a running start, so the machine was headed down the steep, grassy pitch and was in the air in record distance at 11:42. Out over the bridge again he went, between roughly wooded hills on either side and turned south down the Hudson, past Grant's tomb and over the plying excursion and ferry boats, the Statute of Liberty, to within a few feet of the shed which housed his machine on Governor's Island during the Hudson-Fulton celebration. The exact time was not taken here, but has been put at 12 noon. At 49.3 miles an hour it would just about take from 11.42 to 12 noon to cover the 14.5 miles.

As soon as the Curtiss party and the newspaper men could get to the battery they boarded the little government ferry which runs to Governor's Island. Mr. and Mrs. Curtiss embraced and were then congratulated by the few who were lucky enough to get by the guards at the ferry. The Hammondsport delegation and a committee from the Aeronautical Society were on hand to express their appreciation of the great feat. The Aero Club of America, under whose auspices the prize was donated, unfortunately neglected the formalities of such a momentous occasion.

The party went to the Astor for luncheon and then proceeded to the *World* office where the check for $10,000 was handed Mr. Curtiss with a few congratulatory words on his achievement.

TRIAL FLIGHTS.

Previous to this memorable flight, Curtiss made several long flights at Hammondsport over Lake Keuka, landing in the water, one of which lasted thirty-eight minutes.

Mr. Curtiss also entered for the Scientific American trophy, and the first half of his trip counts as a record for this event. Mr. Curtiss won the cup on the only two previous trials.

THE MACHINE.

Nearly four pounds to the square foot were carried in the flight, the upper plane having a spread of 31 feet 3 inches, being extended 30 inches on each side. The lower plane measured 26 feet 3 inches. The front and rear horizontals were about three inches wider than usual. Flat rubber bags had been arranged below the outer extremities of the under planes, wooden strips being fastened to the front and rear lateral beams forming the chord of the surface and in between were the rubber air bags. Two cylindrical metal tanks were also attached under the lower surfaces on a line with the wheels, and the usual central skid had a wide board nailed to it on which was another rubber bag as shown in the photo. The two tanks were left behind at Spuyten Duyvil. Just in front of the front wheel, too, was a small curved surface to act as a hydroplane in case of landing in the water.

A Bosch magneto secured the efficiency of the spark and a special large El Arco radiator kept the 50 H. P. Curtiss 8 cylinder engine cool, and Vacuum oil did the lubricating. The wheels are fitted with Palmer tires and the planes are covered with Baldwin combination cloth.

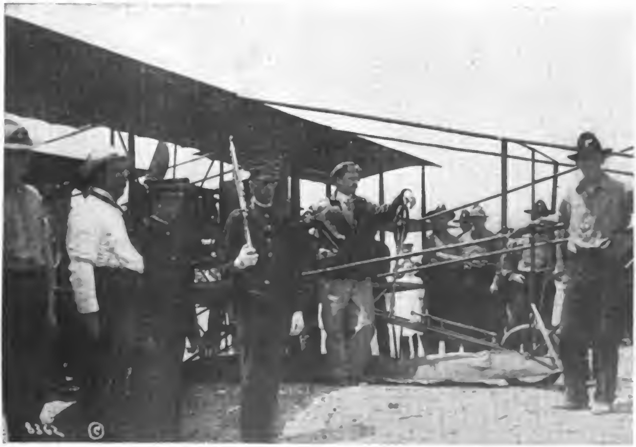
PAULHAN'S FLIGHT COMPARED.

Paulhan took 4 hours 12 minutes elapsed time to cover 183 miles when he won the London Mail's $50,000 and made it in two stages of 117 and 66 miles each. The 117 miles were covered in 2:39, a rate of nearly 44 miles per hour. A night's sleep intervened and the remaining 66 miles were covered in 1:23, a rate of nearly 48 miles per hour. The average for the above was 44:37 miles per hour. Paulhan could have landed at almost any time and started again, whereas Curtiss could not have started if he had had to land in the water and for the whole distance there was scarcely a suitable space for landing on the ground, as for nearly the entire way rocky, wooded hills with precipitous sides line the river.

DINNERS TO CURTISS.

The following Tuesday evening a banquet was given by the *World* at the Hotel Astor to Mr. Curtiss, presided over by Mayor Gaynor, to which invitations were sent by the commonplace telegraph. Telegrams of congratulation from all over the world were read between courses. The speakers were: Mayor Gaynor, Hudson Maxim, president of the Aeronautical Society; Samuel H. Valentine, vice-president Aero Club of America; Don Seitz, of the *World;* Hon. James M. Beck, and Glenn Curtiss himself was prevailed upon to say a few words.

On June 7th the N. Y. Press Club gave a dinner to Curtiss. President John A. Hennessy presided and introduced the speakers with an abundant fund of humor. J. Bernard Walker, editor of the *Scientific American*, announced the Edwin Gould prize with appropriate remarks. William A. Johnston, of the N. Y. *World*, announced a trophy of the *Evening World* for amateurs; both proffers aroused great enthusiasm. The other speakers were: G. H. Curtiss, Charles M. Manly, Lieut. Humphreys, late of the U. S. A.; Lee S. Burridge, Clifford B. Harmon, William J. Hammer, and Rhinelander Waldo.



Just After Curtiss Landed at Governor's Island *Pictorial News Co.*

Hamilton Flies to Philadelphia

First Round Trip Between Cities.

SCHEDULE OF THE FLIGHT.

TO PHILADELPHIA.

	Distance.	Time.
Left Governors Island........		7:43 A.M.
Landed at Philadelphia.......	86.0	9:26 A.M.
RETURN FLIGHT.		
Left Philadelphia		11:33 A.M.
Landed. South Amboy (after a detour).....................	68.0	12.54 P.M.
Reascended, South Amboy......	68.0	6:17 P.M.
Arrived at Governors Island...	89.0	6:40 P.M.

Time to Philadelphia, 1 hour, 43 minutes.
Philadelphia to South Amboy, 1 hr. 21 min.
South Amboy to Governors Island, 23 minutes.
Total distance, Phila. and return, 175 miles.
Total time in air, 3 hours, 27 minutes.
Average speed per hour to Phila., 50.09 miles.
Average hourly speed from Phila., 51.34 miles.
Airline distance, one way, 75 miles.
Average speed over straight line, 43.47 miles.

NOTE.—The distance by path is not exactly accurate.

Weight of machine with extra large oil and gas tanks, mounted, 950 pounds.

Surface main planes, 236 square feet.

On June 13, Charles K. Hamilton flew from New York to Philadelphia and back in a Curtiss biplane in just a trifle over eleven hours. This is the first round trip between large cities and he kept a schedule which had previously been prepared very closely. His average from New York to Philadelphia and return was 50.72 miles per hour. On his trip over he made 50.09 and returning, 51.34. A special train on the Pennsylvania railroad followed him nearly the entire distance.

Hamilton made the first start from Governors Island at 7.11 A. M., but the propeller struck an obstruction, breaking one of the blades. Glenn H. Curtiss took the propeller from his Albany-New York machine, which fortunately was still housed on the Island, and it was quickly put on Hamilton's 'plane, and he prepared for the second start, which was made at 7:36 A. M. He rose rapidly to a height of about two hundred feet and circled Governors Island, passing over his starting point and continued turning, until at 7:43 he actually started over New York Bay, out over the Statute of Liberty and straight for the high chimney of the Standard Oil Company at Bayonne. Heading then to the right over the Kill von Kull at a speed of about 45 miles per hour he flew straight over Elizabethport, where he came in sight of the special train which accompanied him over the tracks of the Pennsylvania railroad. He passed through Trenton at 8:49 and landed in Philadelphia at 9:26, just 1 hour and 43 minutes after starting.

Returning from Philadelphia the start was made at 11:33 A. M. and Trenton was passed at 12:09 P. M. Shortly after this point the motor began misfiring and he became confused by the railroad tracks of the Pennsylvania railroad and the Baltimore & Ohio railroad. Following the latter to South Amboy, he then decided to make a landing and seeing what he supposed to be a meadow on the shores of the Raritan River, he descended, but found the ground was a marsh. The spark plugs were changed and a new propeller sent from Governors Island was put on the machine to replace the one which he had which was broken in landing. The machine was carried from this wet ground up the bank to a roadway, and a new start was made from this narrow place at 6:20 P. M. and Governors Island was reached at 6:40, a little over eleven hours from the time of leaving.

Bosch Magneto and Palmer tires won again. The radiator was an A-Z.

Other Flights in Curtiss Machines.

On June 7th to 9th, Willard and Mars were at Topeka, Kan. In flying over a railroad train, the aeroplane caught the suction from the last car and dropped to the ground, partially wrecking it. Mars was uninjured.

On June 12 at Springfield, Mo., Willard's engine failed him at a critical point, after making two good cross-country flights. In making a hasty descent Willard sustained cuts and bruises and the machine was almost totally wrecked.

J. C. Mars and C. F. Willard gave exhibitions at Joplin, Mo., May 28-31. Both Willard and Mars did well the first two days. Rain then intervened and "rain checks" were issued. On the 31st a new "stunt" was developed.

PROPELLER HIT BY BULLET.

Opening the program of the last day of flights, Charlie Willard launched out on a cross-country flight early in the afternoon. Straight across uneven country he flew until he disappeared across the crest of a line of hills. When he did not return after an hour's wait, J. C. Mars, the other aviator, set out to find him. Following the direction taken by Willard, Mars found him six miles from the aviation field, near Carl Junction, Mo. Mars landed nearby and discovered that Willard's propeller had been splintered by a rifle shot, from some person whose identity is unknown. Willard was at a height of 500 feet when the bullet struck his machine. He landed with considerable difficulty, barely escaping collision with a clump of trees. As soon as he discovered the nature of the accident Mars flew back to the aviation field, explained the circumstances and an automobile carried a new propeller to Willard. Mars returning to him through the air.

Willard's machine repaired, both aviators flew back to the aviation field and described figures in the air for an hour.

Hamilton finished his engagement at Atlanta, where he made his usual highly spectacular flights over the Speedway and during the auto races, on May 7th. The day before he made cross-country flight to Jonesboro, thirteen miles away, and return.

At Augusta, Ga., on the 11th of May he aroused an enormous crowd to a high pitch of enthusiasm. From there he went to Jacksonville, Fla., for May 21-22.

Willard flew in Alexandria, Va., May 14, for thirty minutes in a drizzling rain.

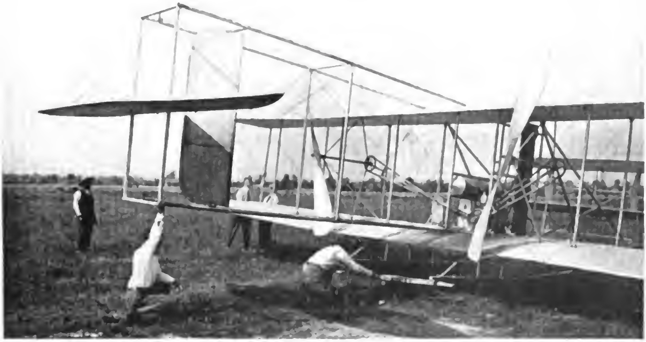
The Aviation World

Wright Students Complete Training.

Dayton, O., June 11.—The Wright Company closed the Montgomery camp the last of May. As the pupils there had practically completed their training they were brought on to Dayton to help train the new men. Since that time, flying has been done in all kinds of weather and in winds running up to thirty-two miles an hour. The men are taking long glides, and in fact, are thoroughly familiarizing themselves with the operation of the machine under every possible condition.

Some sensational flights have been made for altitude, gliding and short circles. Only a few days ago, June 8th, Orville Wright was up to an altitude of about two thousand feet. When about a mile and a half or two miles away from the field he shut off the power and descended on an angle, and to avoid over-shooting the mark, he had to make several large circles. This was certainly an inspiring sight.

Duval La Chapelle, Paris; Walter Brookins, Dayton Ohio; Ralph Johnstone and Frank Coffyn, of New York, and Arch Hoxsey, of Pasadena, Cal., with A. L. Welch, of Washington, are the men who have completed their training.



New Stability Plane on Wright Machine

The photograph shows the students putting the truck under a Wright aeroplane at the Montgomery, Ala., aviation training camp in preparation for starting a flight. The rail on which this rolls is in sections which may be handled easily and quickly placed in position. Unless it is found desirable to make a quick and short start, as in a restricted area, the tower and weight are not used, but the machine travels along the rail with its own propelling force, gaining momentum until the aviator raises the elevating planes and the aeroplane rises in flight. The use of the rail makes it possible to start on short notice on almost any kind of ground affording sufficient open space to get into the air. The ground at the aviation training camp at Dayton is peat, which rises into uneven hummocks and makes what naturally would be thought a most objectionable surface to start or land on. The Wright aeroplanes have no trouble, however.

During the last ten days, more than 161 flights have been made of a total duration of twenty hours. The meet at Indianapolis, June 13th to 18th, is making everyone hustle, the factory is turning out a machine a week, and the Exhibition Department has bookings already to keep at least twenty-five machines going in the fall.

Bishop Wright Takes First Trip.

On May 25th the Dayton Aeroplane Club was invited by the Wright Brothers to visit the grounds and witness the flights. Eight were made, on one of which Orville Wright went up to 2,720 feet. In another flight Orville took his father for his first ride, remaining in the air for ten and one-half minutes. The last trip of the day was made by the two brothers together, for the first time.

A committee has been appointed by the Aeroplane Club to arrange for a suitable memorial to the Wrights. The club will also purchase an aeroplane and has two sites in views for an aerodrome. The club now has over six hundred members.

Wright Machines Now Have Tails.

The illustration herewith shows the tail now being used at Dayton. This apparently is either under independent control of the operator or is connected by crossed wires to the front rudder and acts in conjunction with it. A rudder of this nature, under the control of the aviator, has been added to some of the French Wright machines, and in the German Wright machines a fixed horizontal surface, 12 ft. by 2 ft. is also located as shown.

Lots of Flying at Mineola.

Mineola, June 11.—A lot of credit must be given to Clifford B. Harmon, who is the only amateur in the East, at least, who is doing much flying. Since he began flying at Mineola his aerial trips have become longer and longer and he has ventured forth in greater and greater breezes. He has had a couple of accidents of no very serious consequence, though a few days ago in landing a bit abruptly the running gear gave way, breaking some struts and the propeller.

Hamilton making a Sensational Dive over the Aeronautical Society's Shed *N. Y. World Photo*

FLIES 55 MINUTES.

His best flight has been one of fifty-five minutes and no one took particular notice of the fact. A year ago this was about the record and the papers described in full detail everybody's aeroplane, even if on paper only.

These accidents Mr. Harmon ascribes to lack of power in his seven cylinder Gnome motor. He has sent abroad for new valve springs which he expects will make everything all right again. Another Farman machine will also be delivered to him shortly.

Joseph Seymour, the auto race driver, has made more than a hundred flights, from little jumps to one of twenty minutes day before yesterday. Seymour, who bought A. P. Warner's Curtiss, claims that he finds it very difficult to turn to the right, which is in the opposite direction to that of the rotation of the propeller, and a larger circle must be made than when turning to the left. The ailerons seem to have greater effect and stability is more easily maintained when turning to the left. In flying straightaway in calm air no turning movement of the aeroplane itself is noticed.

Captain Baldwin, since the first of May, has had about twenty days' flying, beginning with just runs on the ground and getting up to a fifteen-minute flight. Captain Baldwin believes in a low center of gravity and has his motor placed low down on the lower plane, driving his propeller by a chain. While he uses ailerons now, he will shortly put back his vertical fin on top of the upper surface.

Harry S. Harkness is completing a big shed to house his Antoinette.

W. L. Fairchild has installed his Requa-Gibson motor, and will be ready in a few days to give his his monoplane, which comprises some new features, a try-out. In the next issue we will be able to give full details of the machine.

In the Aeronautical Society's shed, Frank Van Anden has a new biplane, W. J. Diefenbach is still working on his biplane, the Louis Rosenbaum monoplane is nearly ready for trial and Miss E. L. Todd has her machine there. Edwards and Edick have a Curtiss-type biplane with a motor of their own make installed.

Francois Raiche, who built a Curtiss-type biplane for Daniel Frisbie, of Rochester, started to try it out on June 8th. The engine was cranked, Raiche got in the seat, touched the accelerator and—but the machine did not move. Raiche looked wonderingly around to see why it didn't go, but there was nothin' doin.' The machine was given a good strong push and it ran along for ten yards when the propeller came off and the crankshaft broke in two. The engine has four cylinders, opposed, arranged horizontally. On a previous trial of the engine, the cylinders broke.

Hamilton Flying at Mineola.

On the day of the Curtiss flight, Hamilton and his machine arrived in New York. Within a few days it was down at Mineola where Hamilton did some of his highly sensational flying for the benefit of the hundreds of people, automobile parties from New York, wealthily residents of nearby summer colonies, who are on hand daily now to watch the flights of Hamilton, Harmon, Seymour and Baldwin, and to look over the other machines being built there in the sheds and tents.

Hamilton goes up to a height of several hundred feet and then makes a dive to the earth at an angle of nearly forty-five degrees. Within twenty-five or thirty feet of the ground he shoves up his front control and the crowd breathes a sigh of relief at the safe and easy landing after the fearful dip. On only one occasion here has he carried a passenger.

On June 5th Hamilton began covering the machine anew with cloth, as the old material had become worn out with almost daily use in all kinds of weather, in preparation for the flight to Philadelphia, and on the 8th he made a trial flight with the new covering.

FLIES 66 MINUTES.

The weather delayed Hamilton's projected flight to Philadelphia and the aeroplane was not ready at Governors Island till the afternoon of June 11. Toward evening Hamilton made a great flight of 66 minutes, soaring and swooping like a gull over the ferry boats plying the harbor, not landing until it was pitch dark.

On Sunday, the 12th, another flight was made in the drizzling rain of about ten minutes.

STEVENS GIVES ADVICE TO FLYERS.

A. Leo Stevens offers a valuable suggestion to aviators. He argues that aviators should carry with them on the machine on cross-country flights a spare propeller. This would add little weight to the machine and would certainly avoid delays dependent upon the breaking of the propeller.

Erickson Gets His Plane Off Ground.

After experimenting for several months with two different biplanes, Louis G. Erickson, of Springfield, Mass., finally made good. On May 12 he rose about ten feet in the air, traveled sixty feet or more at a very uncertain angle and then shut off the power just as it looked as if the biplane would turn completely over and bury the aviator beneath its wreckage. On May 20 another trial was made, but no better results obtained.

This is the second biplane Mr. Erickson has built. He is now working on another biplane, the planes of which will be 5x30 feet. The frame will be of spruce and bamboo, and the fabric will be rubberized silk instead of varnished cambric.

DETAILS OF THE ERICKSON II.

Main planes, which are perfectly flat, measure 20 ft. by 7 ft., covered with cambric, which was treated with linseed oil and Japan, equal parts of each. Bamboo construction is used altogether for ribs and main beams. Ribs placed 1 ft. apart and tied to main beams, overlap of 10 in. to the rear. Ribs, ⅝ in. diameter. The uprights are 1 in. bamboo, 4 ft. 6 in. in length. The riser is 2 ft. by 6 ft., bamboo frame also. The rudder is 2 ft. by 6 ft. horizontal and 2 ft. by 3 ft. vertical. Both riser and rudder Curtiss copy. Outriggers to riser and rudder are 1-in. bamboo, distance of each 11 ft, 6 in. Ailerons, 2 ft. by 6 ft., work with shoulder brace. Chassis, 32 in. by 20 in., regular aeroplane wheels with Hartford Aviator Tires, set same as Curtiss type. Bracing, No. 18 piano wire used with copper ferrules. Propeller 6 ft. 6 in., 11 in. at ends, made of Philippine mahogany, laminated 6 pieces, true screw. Motor power, a 30 H. P. Harriman-Fitzpatrick make, turning propeller 1,000, developing about 200 to 225 pounds thrust, holding aeroplane by means of rope tied to floor. Weight complete with motor, 475 pounds.

Flights at Plum Island.

William Hilliard, an auto racer of Boston, has been making successful flights in a Herring-Burgess machine at the company's trial grounds at Plum Island, Mass.

The Herring-Burgess aeroplane bought by C. W. Parker, a showman of Abilene, Kans., made its first flight since the latter's ownership on May 20 at Salina. Shortly after it left the ground it was struck by a gust of wind and LaComme, the inexperienced pilot, shut off the motor. A couple of braces in the running gear were broken.

Indianapolis Meet Opens.

Indianapolis, June 15.—The second day of the meet closed yesterday. Five Wright aviators are here and in addition are: J. W. Curzon [Farman], M. Marquette [Marquette], D. R. Shaw [Shaw], Lincoln Beachey [Beachey] and G. L. Bumbaugh [Fisher].

Previous to the opening the Wright aviators made some preliminary ascents.

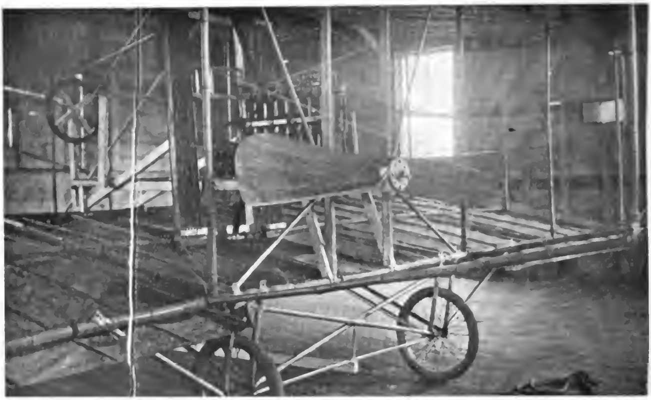
NEW WORLD ALTITUDE RECORD?

W. H. Brookins [Wright] flew to an altitude of 4384 feet. A confirmation of this was sought and the corrected height put at 2100 feet. There may be an error in the sending of one or the other of the messages. Orville Wright himself made a short flight. Brookins made 6 miles for the fastest 10 mile prize. A. L. Welsh [Wright] made the mile trial in 2:32. Brookins gave a spectacular exhibition of figures, sharp turns and a dive. Two machines were in the air at once, each carrying a passenger for 12 minutes.

Brookins [Wright] made a trial high flight, going up to 2095 feet. In the second trial he did even better, being measured at 4384 feet by A. B. Lambert of the St. Louis A. C.

G. L. Bumbaugh met with an accident in a machine of local make, after getting sixty feet in the air. Bumbaugh, the veteran balloonist and dirigible pilot, was caught under the machine when it fell, and painfully injured.

Full details of the meet will appear in the next issue.



The Erickson Biplane

New Machines

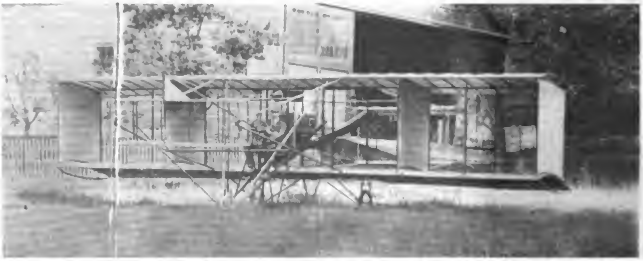
Bicycle Rider Turns Aviator.

Charles W. Miller, the world famous six-day bicycle rider, says he expects to win the New York-St. Louis $30,000 prize.

Mr. Miller has just had completed by Messrs C. and A. Wittemann, of Staten Island, an aeroplane of his own design, equipped with a 75 H. P. Whitehead motor, a comparatively new, high powered aviation motor. With this power Miller's aeroplane, which is of the biplane type, is expected to carry three.

The main planes spread 35 ft., by 6¼ ft. fore and aft. These are covered with No. 6 Naiad cloth laced to frame and stretched to drumhead tightness. These are spaced 6 ft. apart.

The steering is operated by a wheel as in an automobile, somewhat similar to the Curtiss arrangement. The front elevator has an 8-ft. spread, by 2½-ft. depth. A double surface, self-balancing tail is provided for stability, with a single vertical rudder in the center. Vertical surfaces between the planes, similar to the Voisin machine, tend to maintain lateral equilibrium. The machine is trussed with steel aero cable, galvanized to prevent rusting, fastened to Wittemann turnbuckles and specially designed eye bolts.



Chas. W. Miller's Aeroplane, Built by Wittemann

The chassis is equipped with three pneumatic tired wheels, the rear wheels having a spring shock absorber, as shown in the June number.

The ribs are three ply, laminated ash and spruce. The weight of the machine, complete, is 760 pounds. The magneto is Bosch high tension radiator El Arco.

The propeller of the Miller aeroplane is 8 ft. in diameter, of 6-ft. pitch. The Whitehead Company reports that "On test it gave 270 pounds thrust, but this by no means utilized the power of the engine, the propeller being one that was merely calculated to drive the aeroplane about thirty-eight miles an hour. For higher speeds Miller will carry different propellers.

"On a preliminary test, the engine with a 10-ft. propeller, with a 7-ft. pitch, and 17-in. width of blades gave a thrust of 410 pounds.

"This is the greatest thrust that has ever been developed by a single engine on a single screw for the given power and pitch speed, which was 5,600 ft. per minute.

"The Whitehead motor in construction is of the utmost simplicity, there being no valves, springs, cams, cam shafts, rocking arms, or intake manifolds. There is absolutely nothing to get out of order. The utility of the two-cycle type and its ability to make long runs without getting out of order is generally recognized. The Whitehead motor has reached a degree of perfection which has never before been attained by this type of engine, and its lightness, only 200 pounds, makes it the leading engine for aviation."

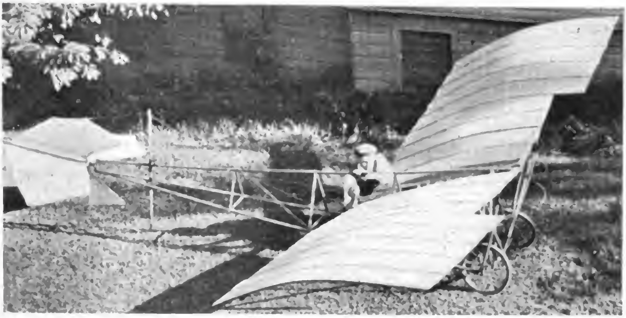
The Andrews Biplane.

E. F. Andrews, of Daytona Beach, Fla., has built a biplane which has a wing spread of 43 ft., the top plane being about 4 ft. shorter than the bottom one. The planes are 7 ft. wide at the middle and 4 ft. 3 in. at the tips, and are 6 ft. apart. The top plane has a very small curve and appears to be set level, while the bottom plane has a much deeper curve and is set at a considerable angle. Lateral stability is maintained by the raising and lowering of the bottom planes, making them more or less effective.

The gyroscopic force of the revolving cylinder motors also tend to keep the machine on an even keel. When the machine was first put together there were two horizontal rudders, 6 ft. by 4 ft. 3 in.—one 14 ft. in front and the other the same distance in the rear, but after a few trials another surface was added to each rudder. The rear one was made stationary and the front one was moved to within 10 ft. of the main cell. With this improvement the machine flew about 100 ft. at a height of 6 ft. The flight was stopped by the breaking of the tail. Owing to breakages, no more flights have been made.

There are two revolving cylinders, 36 h. p. Adams-Farwell engines, set one on each side of the aviator. These drive direct two 7 ft. 4 in. tractor propellers of 4½ ft. pitch.

The machine weighs about 600 lbs. and is mounted on three small wheels without springs. The horizontal and vertical rudders are controlled by two small wheels, one above the other, while the balancing planes are controlled by foot wires.



Demoiselle Type Made in Seattle

Sails Over New York.

New York, June 14.—Fred Owens sailed his 6 H. P. dirigible from Hillside Park, Newark, across New York to-day. Passaic was crossed, then the Hudson River to the City Hall. The engine got going bad and he attempted to land on the roof of the City Court Building. Someone in his zeal to help grabbed the trail rope and the airship hit the chimney, breaking the frame and stopping the motor. The ship went up again in this condition and crossed the East River, narrowly missing the Brooklyn Bridge, to a safe, though precarious landing in a tree in Brooklyn, when he was rescued by firemen.

News on the Coast

By Cleve T. Shaffer

The Loose Monoplane.

GEORGE H. LOOSE, of the Pacific Aero Club, has just completed a new aeroplane which he is now trying out.

The machine, 32 ft. spread, 31 ft. long, and 7 ft. high, is noticeable for its bird-like lines. It is very well and strongly built, having a number of novel and original features, several of the constructural details being especially praiseworthy.

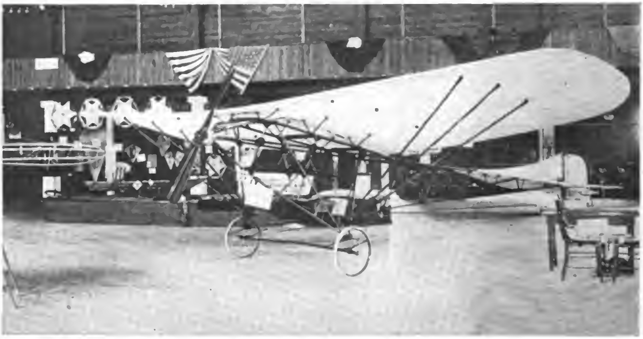
Planes, in two halves, do not attach direct to body but join together a few inches above the inverted triangular frame, where they are held by rigid connections; are 10 ft. deep at the joining and extend 16 ft. laterally, the depth of the curved ends being 7 ft. 6 in.; total surface 275 ft.

Construction, double covered ribs, ½ in. by ¼ in., 6 in. apart, 3 built-up lateral wing bars or beams, 1 in. by ¾ in., with ½ in. blocks between. Curvature, arc of a circle, a little over 1 in 19, greatest depth at approximately center of plane.

Incident angle on ground 9 degrees, flight about 5 degrees. Three bamboo poles 12′ 2″ long, reinforced with two wires, on each side, one behind the other in the plane of flight, take the weight and also a part of the lift of the planes, being fixed to the chassis at their lower ends in such a manner as to be easily removable in demounting wings.

Mounting. The novel idea of using full elliptic springs is, I believe, in this machine its first adaptation to the aeroplane. Tread, 8 ft.; wheels, 26″; rims and tires appear rather too narrow, hub 6″. Steel tubing axle supports the two 28″ by 1½″ elliptic springs, one on each side. Eight 1″, by 16 guage steel tubes, 4 on each side, branch from spring clips and support the bird-shaped body.

Body. 1¼″ round spruce members connected with same ingenious patent fasteners, as shown in photo of former machine (AERONAUTICS for April) form an inverted triangle; the front carrying a special alloy casting which holds the front bearing (R. I. V.) of the propeller shaft, fins cast integral allow the frame members to be bolted to casting making a very rigid front bearing, the inner end of casting taking the thrust or pull bearings. Uprights, 35″ apart, guyed with piano wire and turnbuckles of own make. Seat of aluminum 2 ft. from ground, placed over lower frame member. Two wire-wrapped, steel-shod skids are placed at the rear extremity of the frame.



George H. Loose Machine

Rudders and Keels. Horizontal rudders, Antoinette type, front edge 18 ft. back from rear edge main planes, 2 triangular surfaces 4 ft. wide 28 in. deep, between which is a vertical rudder 44 in. high by 30 in. wide. These rudders are kept in their normal position by spiral springs. The entire rear rudder construction is of small steel tubing properly brazed.

Keels, both horizontal and vertical are in evidence, tapering down from size of rear rudders to a point 10 ft. therefrom on the frame and having about 40 sq. ft. in the horizontal and 34 sq. ft. in the vertical.

Power Plant. In deference to Mr. Loose wishes, description of motor, further than it is a 4 cylinder 3¾″ by 4″, 25 H. P., is withheld as is method of lateral control. The motor placed in front of and above operator drives by a short chain. The driving member is a 9″ diameter 3½″ face cone clutch, mineral-tanned leather face. Gear ratio

2 to 1 of propeller. A rear propeller shaft bearing is affixed to the front of motor. In "Mounting" have given description of front and thrust bearings. A clutch lever extends to within reach of operator's seat.

Propeller is 7½ ft. diameter, 8 ft. pitch, but looks to be wasteful of power. R. P. M. stated 800.

Radiator, constructed of brass tubes 1¾" wide, is of neat workmanship, specially built for this machine by the Pacific Radiator Company of San Francisco. It is of a triangular shape and fits into the body frame-work over the motor, not increasing drift to an appreciable extent. It is doubtful to the writer if the comparatively high pitch speed, 8x800=6,400 ft., can be realized with the 25 H. P. and 7½ ft. diameter propeller.

The weight of machine complete with operator and fuel for 10 miles is about 700 pounds, which compares favorably with the Bleriot XI, the latter having 23 H. P. and 151 sq. ft. lifting surface.

The body design is ideal in allowing propeller shaft free passage.

Flying in Mexico

By E. L. Ramsey.

Miguel Lebrija has demonstrated that an aeroplane will fly in the altitude of Mexico City (7,500), and with a Bleriot monoplane he recently made fifteen successful flights on the plains of Valbuena.

Starting from the hangar, Mr. Lebrija ascended to the height of sixty-five feet and successfully steered his machine around and around through the air, maintaining that height for five minutes when he descended. After receiving the congratulations of his many friends who witnessed the performance, Mr. Lebrija again mounted his seat and made fifteen more flights, all more or less of the same duration as the former.

Machine Used Was A Bleriot Monoplane.

The machine he used in his wonderful performance was a monoplane of the Bleriot type similar to the one used for the cross-channel flight by Bleriot and was not equipped with any special motor or attachments, but was simply a stock machine as received from France.

In starting the machine left the ground 200 meters (666' 2") from the starting line and rose to a vertical height of about sixty-five feet, and during the many trials this height was not exceeded by the aviator, but he stated that he could have gone much higher if he had so wished.

Apparatus under Perfect Control.

The monoplane was under perfect control and obeyed the rudder with ease and when landing glided gracefully to earth and stopped without any perceptible jar. No accident occurred during any of the flights and there was no difficulty experienced with the motor and Mr. Lebrija, by these flights has plainly demonstrated that heavier than air machines can be flown successfully in this altitude, and the former theory that this was impossible on account of the experiments made with a few buzzards brought from Veracruz which died a few days after reaching here, was completely exploded.

Yesterday Mr. Lebrija while trying out his machine, arose to the height of about thirty-five feet, and maintained that height for about ten minutes to the delight of the numerous spectators that had gathered around to witness the flight.

Mr. Lebrija while in the air stopped his motor and glided towards the ground, and when about fifteen feet from terra firma, started the motor again and rose to a height of about seventy-five feet. Then stopping the motor he gracefully glided to the ground, making a safe landing. After this Mr. Lebrija made several other flights, all of which were successful.

Mexican Army Is to Have No Balloon Corps—War Department Denies Rumors to That Effect.

For some time rumors have been current to the effect that the Mexican Army was going to be equipped with an Aerial Fleet for which purpose a number of Aeroplanes and Dirigible Balloons had been purchased and that the equipment would soon arrive in Mexico.

These rumors were denied at the war department yesterday by Col. Luis Perez Figueroa, who stated there was no truth in the reports. Col. Figueroa said:

"Some officers of the Mexican Army have been commissioned to study aviation in various countries, but further than this, the war department has not taken any steps to equip the Mexican Army with Aeroplanes or Dirigible Balloons."

An Aviation Treaty Between Mexico and the United States for the Proper Regulation of Emigration and Smuggling.

The Mexican Ambassador in Washington, Sr. Francisco L. de la Barra and Secretary of State Knox, have been discussing a treaty between the United States and Mexico with regard to aerial navigation and which will have for its purpose the enforcement of the treaties at present in force with regard to emigration and smuggling.

The treaty which will be signed by Mexico and the United States will be the first of its nature in the world as up to date, while the several nations of the world have apparently become alarmed at the perils offered by aviation in the event of war, they have done nothing towards solving the problem as regards the improper passage over frontier lines.

March 18, 1910.

Enclosed find money order for $3 for which please renew my subscription to your valued publication. If I should miss a copy I would want to sue you for all you've got.

H. D. Callahan.

San Saba, Tex.

Meets and

Coming Events

Tanforan Meet Held in Conjunction With Auto Races by the San Francisco Motor Club.

The Greene biplane belonging to Roy Crosby, equipped with a new motor and having a number of changes in its make-up, was brought out on the field at Tanforan, Cal., May 29th and 30th, but the wind was evidently too strong for the new aviator, Harold Hall, to buck against. Hall, who is only 18 years old, has made several flights with this machine and also has flown Frank Johnson's "Curtiss."

The gliding contests attracted a large number of entries. All flights were towed. The two-rope way of towing is open to criticism, it being in the writer's opinion a dangerous method.

Ten-year-old Walter Sittman won first prize of $100 for height, Wolf and Becher won second. A novel feature was the flights by the three young Misses Johnson, one of whom won second prize.

The second day the first prize was won by Harold Winthrop; second prize by J. Sittman, the Becher and Wolf gliders winning three prizes.

Robert Bergfeld, while being towed by two autos had a bad fall owing to a rope breaking. The glider was totally destroyed, Bergfeld having a lucky escape.

Exhibition at San Jose.

San Jose, Cal., is tired of aviation and the promoters of the Auto and Aero Show during the Rose Carnival, had a hot argument with Frank H. Johnson, who has been giving none too sensational exhibitions with his Curtiss machine. Johnson is reported to insist on pay whether he flies or not. During the fete Johnson made one or two short flights and Harold Hall took Whipple Hall's Curtiss machine for a mile.

University of Illinois Flights.

The aviation "meet" of the University of Illinois, at Urbana, was a fizzle, all but the kites of Samuel F. Perkins, who had his usual big display of kites to make good when the aeroplanes fail to fly. In a preliminary flight the day before the exhibition day, May 21, Otto Brodie considerably damaged the Curtiss aeroplane. The wreck was brought back to the university wood shops, and with the help of instructors, employes and students, was repaired late at night. Nothing more was done until the 23rd, when they took it out on the golf links. (In the repairing different wood had been used, and it had been rained upon, soaking it and putting the machine out of balance.) Brodie ran the machine several hundred yards, under power, on the ground, and then flew back to the starting point, hit a small sapling, and —two hours or so for repairs. Brodie or Wild made eleven starts, and once rose almost two feet off the ground and stayed up for almost thirty feet. So everyone came back in disgust and the machine went back to Chicago the next day.

The reasons ascribed to the failure of the event were: The unbalanced condition of the machine, and the overweight, due to the soaking; the smallness of the field, 400 or 450 yards; the crowding of the spectators, and the possibility of the engine being underpowered.

First National Novice Meet.

St. Louis, June 12.—The first real aviation meet at which no other inducements than prizes are offered will be held at St. Louis, July 11 to 16 the postponed dates of the First National Aviation Meeting for Novices of the Aero Club of St Louis, which was to have been held June 20 to 25. Already four actual entries have been received on the entry blanks provided for the purpose for th first time in America, accompanied by the $10 entry fee, to be refunded to entrants whose machines are on the ground Saturday previous to opening day.

Seven more entries are promised from out of town owners or builders, while five St. Louisans have signified their definite intention to participate. The first entry came from William Thomas of Hammondsport, N. Y., with his biplane, recently described in AERONAUTICS. Other entries came from William Curtiss Robinson, of Grinnel Ia. (monoplane), and from Eric Bergstrom, Chicago, Ill., with what he claims is the smallest monoplane for its carrying capacity in the world Howard Gill, of Los Angeles, Cal., entered a Gill Dosh biplane, and expects to enter a Curtiss-type biplane also.

Entries will close at the regular fee on June 30 They will be accepted at $20, not to be refunded; until July 5, and until July 9 at $100, not to be refunded. Blanks and all particulars can be obtained upon application to E. Percy Noel, secretary of the Aero Club of St. Louis, 304 North Fourth Street, St. Louis.

The meeting was postponed in order to gain time in which to obtain larger grounds to accommodate the number of machines of which entry was promised. It is now expected that twenty planes will be on the field, and the construction of half that many sheds will be begun at once, others going up as entries are received.

The new grounds will be sufficiently large for all purposes and will form the permanent aviation field of the Aero Club of St. Louis, to be known as Camp No. 3. The Aero Club has already established a small field within the city limits, where H. A. Robinson and J. N. Sparling are practicing with their machines.

Aeroplanes Will Fly in Montreal.

Montreal is giving evidence of her progressive spirit by announcing an aviation meet to take place there, commencing on the 25th of June and lasting until the 4th of July.

The meet will be held under the auspices of the Automobile and Aero Club of Canada, which is affiliated with the mother institution in Great Britain, and is being organized by E. M. Wilcox, publisher of *Motoring*, and C. W. Bennett, a well known Canadian theatrical magnate.

Five Wright machines will definitely fly and it is expected several others will participate.

St. Louis to Hold Show.

Under the auspices of the Aero Club of St. Louis, the St. Louis National Aero Show has been organized, and will be held in the Coliseum Building, October 8th to 13th, during the period when outdoor aeroplane and balloon events will take place in St. Louis, and is under the management of G. L. Holton.

The Aero Show will be a complete exhibition of things aeronautic, and will include displays of nearly every manufacturer of aerial apparatus and supplies in America, and agents for foreign makers.

In kindly offering free news service of the show, the promoters state:

"The show has been organized with a serious purpose, which we believe will be appreciated by the press of America, in that the object is to advance the American aeronautic industry so that it will compare favorably to the industry which already exists abroad."

Aeronautic Calendar for U. S.

June 13-18—Indianapolis, Ind., "First Nat. Aviation Meet," with exhibitions with Wright machines and open to all others.

June 18-19—Louisville, Ky., flights by Curtiss and Mars.

June 21-26—Nashville, Tenn., exhibition flights at Military Tournament by Hamilton.

June 22-25—Minneapolis, Minn., flights by three Curtiss aviators.

June 22-26—Minneapolis and St. Paul, Curtiss, Willard and Mars.

June 28-July 5—Montreal, Can., aviation meet, with five Wright machines and others.

June 29-July 1—Sioux City, Ia., Willard and Mars.

July 2-4—Aurora, Ill., exhibition, one Wright machine.

July 2-5—Pittsburg, Kan., Wright flights, one machine.

July 4—Washington, D. C., balloon races.

July 5-6—Peoria, Ill., balloon race.

July 9-13—Omaha, Neb., Curtiss, Willard and Mars.

July 9-14—Omaha, Neb., flights by Curtiss, Willard, Mars and others.

July 11-16—St. Louis, balloon race and aviation meet for novices.

August 12—Indianapolis, Ind., balloon race.

Sept. 5-10—Lincoln, Neb., exhibition flights by Wright aviators.

Sept. 5-10—Hamline, Minn., exhibition flights by Wright aviators.

Sept. 17—Indianapolis, Ind., elimination race for Gordon Bennett balloon race.

Sept. 19-24—Detroit, Mich., Wright exhibition flights.

Sept. 26-30—Trenton, N. J., exhibition flights by Wright aviators.

Oct. 1-8—Springfield, Ill., exhibition flights by Wright aviators.

Oct. 3-8—Sedalia, Mo., exhibition flights by Wright aviators.

Oct. 5-15—St. Louis, Mo., aeroplane exhibition.

Oct. 8-13—St. Louis, Mo., Aero Show.

Oct. 17—St. Louis, Mo., Gordon Bennett balloon race.

Oct. 22—Mineola, N. Y., Gordon Bennett and other aviation contests.

Dec. 1-8—Chicago, Ill., aeronautical exhibition of A. C. of Illinois.

Model Flights.

At Hempstead Plains, Mineola, Long Island, there will be cross-country model aeroplane flight contests every Saturday afternoon, also kite flying contests free to all.

Mr. Edward Durant, director of the Junior Aero Club of America, has donated silver cups for both contests, and the president of the Mineola *Press*, Mr. J. H. Ellensohn, is in charge of the contests.

Members of the New York Model Aero Club will also compete in the model contests, and the school boys of Garden City and Mineola will be active in competing for the kite-flying contest cup.

Frank Schober made a new record in model contests at the 22nd Regiment Armory, New York, June 4th, by flying a Langley-type model 215 ft. 8 in. The model was launched or started from the floor.

On May 21 the West Side Y. M. C. A., New York, held another model contest at the 22nd Regiment Armory. At this contest there was a new cup offered by M. P. Talmage for the boys' class, to be flown for by machines having two propellers. The first leg was won by Frank Schober, 164 ft. 4 in. Second was F. M. Watkins, 154 ft. 5 in., and third, C. G. Halpin, 139 ft. 10 in.

In the men's class Mr. M. P. Talmage, with a Wright biplane, flew 132 ft. 1 in. This is the longest flight ever made with a biplane at any of the contests. Dr. Dederer gave an exhibition flight with his new machine and succeeded in making 195 ft., the longest flight made by any machine since the flights were started.

News In General

AFFILIATED CLUBS REVOLT.

Form New Organization.

Resenting its deeds and misdeeds, its arrogant attitude, the lack of representation, so on and so forth, half of the affiliated clubs have formally cut the strings of the Aero Club of America's apron and will now shift for themselves as best they may.

This happened at a meeting of the affiliated clubs called by the A. C. A. and held in its rooms on May 23. When the delegates were called to order in the morning there seemed to be no business to transact except to renew affiliation for another year and make any suggestions to the mother club which might or might not be acted upon in the discretion of the board of directors. Someone moved to adjourn.

Following were the delegates assembled: A. B. Lambert, Indianapolis and St. Louis; Col. Jerome H. Joyce and A. Albert Hughes, Baltimore; A. W. Carpenter, Harvard; W. B. Strang and George M. Myers, Kansas City; James E. Plew and Victor Lougheed, Chicago; J. V. Martin, E. C. Brown and R. M. Allen, Harvard Aer'l Society; J. S. Fanciulli, Washington; J. M. Satterfield, Buffalo; Alan R. Hawley, Pittsfield, and Augustus Post, Canton.

In the afternoon a second meeting was held. Samuel H. Valentine, the chairman of the morning meeting, Philip T. Dodge, Augustus Post and Alan R. Hawley, all of the A. C. A., withdrew at the second session, after granting the use of the club rooms. Jerome S. Fanciulli, representing the Washington Club could not officially represent that body at the afternoon meeting.

A resolution was adopted calling for the organization of the American Aeronautic Association, which was then formed with George M. Myers, Kansas City Aero Club, President; A. B. Lambert, St. Louis Aero Club, First Vice-President; J. V. Martin, Harvard Aeronautical Society, Second Vice-President; Victor Lougheed, Aero Club of Illinois, Secretary, and Col. Jerome H. Joyce, Aero Club of Baltimore, Treasurer.

The reason for the new organization was defined in the following resolution, which was unanimously adopted:

> "We recommend that for the administration of Aeronautical affairs, of national or local character in the United States, the American Aeronautical Association be formed at once, with officers elected to serve until June 22nd, 1910, in New York City, at which time we recommend that new officers be elected for the ensuing year.
>
> "We further recommend that all aeronautical clubs and bodies now existing or in the future to be organized in the United States, including the Aero Club of America, be invited to join this Association upon some acceptable basis of powers and representation, founded upon the numbers of such clubs, or upon their membership, in accordance with rules and regulations to be enacted into permanent form by the representatives of affiliated clubs here assembled, and to be revised from time to time as may be decided at future meetings of the representatives or delegates of affiliated clubs."

The following letter was delivered to the A. C. A. together with a copy of the resolutions printed above:

> "New York, May 23, 1910.
>
> "To the Aero Club of America,
> "29 West 39th Street,
> "New York City.
>
> "Gentlemen:
>
> "At the meeting held today by representatives of the affiliated aero clubs, assembled in response to your call at your headquarters, 29 West 39th Street, after discussion it was decided that the best interests of the affiliated clubs could not be advanced by conforming to the proposed arrangement between your organization and the Wright Company, and that the future of the affiliated clubs and the interests of aeronautical development in this country could be better conserved by a separate organization, which would not be fettered by the entanglements now existing by reason of our connection with your organization.
>
> "The meeting was, therefore, adjourned without action, immediately after which the affiliated club representatives called a meeting for the purpose of organizing the American Aeronautical Association, to be a democratic organization, representative of the aeronautical interests of the entire United States, for the purpose of controlling aeronautical events in this country.
>
> "In accordance with the expression of opinion in the foregoing resolution, you are cordially invited to send delegates to our next meeting.
>
> "In closing we wish to extend our sincere thanks for the courtesies of your organization.
>
> "Respectfully yours.
> "THE AMERICAN AERONAUTICAL
> "ASSOCIATION,
> "Per VICTOR LOUGHEED,
> "Secretary."

New National Body Organizes June 22.

On June 22 in New York there will be held a big convention with representatives from a large portion of the eighty-odd aero clubs in the country, at which time officers will be elected for the ensuing year, plans formulated for the work of the body, the adoption of rules governing contests and the various prize offerings now awaiting the action of the convention, etc.

As announced in the last issue, the movement for a national body was started by the issuing of a letter by Hudson Maxim, president of The Aeronautical Society, to all the aero clubs of the country. This met with great response.

The day following the secession of the A. C. A.'s clubs several meetings were held between representatives of the newly formed American Aeronautic Association, and of the Aeronautic Federation of America with the result that the convention of June 22 will be a joint affair comprising delegates from all the clubs with which correspondence has been had by both movements.

At a meeting held on June 2 of the Aeronautic Federation of America a temporary committee was formed taking in members thereon appointed for this service by the various clubs associated with the federation. Some forty clubs are represented on this committee, which is headed by Professor David Todd, of Amherst, and Thomas A. Hill, who has been one of the most over-worked energetic enthusiasts in the movement and is doing all the work of the committee up to the time of the convention, was made Secretary-Treasurer.

A proposed constitution and by-laws for adoption at the convention is being put into shape now by Mr. Hill. Daily more clubs are being added to the list of those sending delegates to the convention.

ALL CLUBS FOR HARMONY.

The Aero Club of Washington is watching the new movement with great interest. Dr. A. F. Zahm hopes that the "final outcome will be one grand aeronautical organization embracing the whole country and enjoying solidarity and harmony of action."

While the Aero Club of Ohio has renewed its affiliation with the A. C. A. for another year, the secretary, Mr. J. Blake, states: "We * * * hope that some course will be adopted that will promote general harmony."

Wright Injunction Vacated.

New York, June 15.—Yesterday the U. S. Circuit Court of Appeals vacated the temporary injunction granted the Wright Company against the Herring-Curtiss Co. by Judge Hazel at Buffalo.

The history of the action is as follows:

The Wright Co. moved for a preliminary injunction before Judge Hazel. He held the infringement and validity of the Wright patent had been proved without doubt in the hearing and granted the relief prayed for. Judge Hazel, however, was willing to suspend the issuing of the order, but required the defendants to put up a $10,000 bond until the appeal, which was immediately taken by Curtiss, was decided. Now the Court of Appeals has reversed the Hazel opinion, with costs, and a trial of the infringement suit will now be had before Judge Hazel, with cross-examination of witnesses. The $10,000 bond is cancelled.

The reversal of opinion in the case is not a criterion of the outcome, for no trial on merits has been held. The Court of Appeals merely holds that on account of sharp conflict of evidence and the number of affidavits submitted after the original decision, infringement was not so clearly established as to justify a preliminary injunction.

Les Aeroplanes—Considerations Theoriques, by Paul Raybaud. (F. Louis Vivien, publisher, 20 rue Saulnier, Paris. Price, 1 franc.) A brief exposé of a new theory on effects of air on moving surfaces, which sets aside much of what has until now been generally admitted on the subject. It is written in French.

Lamson vs. Wright Suit.

Paxton, Warrington & Seasongood, of Cincinnati, representing Becker & Blakeslee, of Los Angeles, Cal., have filed papers in a suit against The Wright Company and Wilbur and Orville Wright, in the United States Circuit Court for the Southern District of Ohio, Southern Division, at Cincinnati, by the filing of a bill of complaint against the defendants stated, Charles H. Lamson being complainant.

The bill of complaint prayed for an injunction restraining the defendants from making, using or selling aeronautical apparatus, such as flying machines, embodying the invention for which Letters Patent of the United States were issued to Mr. Lamson, January 22, 1901, No. 666,427. This patent, it will be seen, antedates by over two years the date of application of the Wright patent under which patent the Herring-Curtiss Company and Glenn H. Curtiss and Louis Paulhan have been sued for infringement. The bill of complaint filed as above also asked for an accounting of damages and profits.

The Lamson patent, while stating that the invention relates to "ribbed aerocurved kites," nevertheless sets forth that the construction is capable of use as a flying machine by the application of suitable propelling and guiding mechanism. The patent discloses means for "tilting or inclining" the tips of the wings or planes at each side of the body, and these means are claimed to be equivalent to those embodied in the Wright patent and in the Wright flying machines.

The patent contains the following claim:

> "The herein-described kite having a central frame, wings projecting out from each side of said frame and means for tilting the tips of said wings with relation to the body of the wing."

Mr. Lamson charges that the Wrights simply incorporated in their flying machine his invention, directed at maintaining lateral stability by warping or twisting the wings or supporting surfaces.

> Becker and Blakeslee say: "We understand the Wrights insist that anybody can use a box kite, but Lamson's kite as shown in his patent is a triplane comprising ribbed aerocurves and connecting posts or upright standards jointed thereto corresponding to Wright construction. Also tip warping or tilting means and a tail or rudder having horizontal and vertical members. Lamson's device as patented and operated resembles closely general flying machine structures minus propelling and guiding mechanism."

Judge Hand, in his opinion in the Wright-Paulhan case, said: "I cannot see any relevancy in this patent."

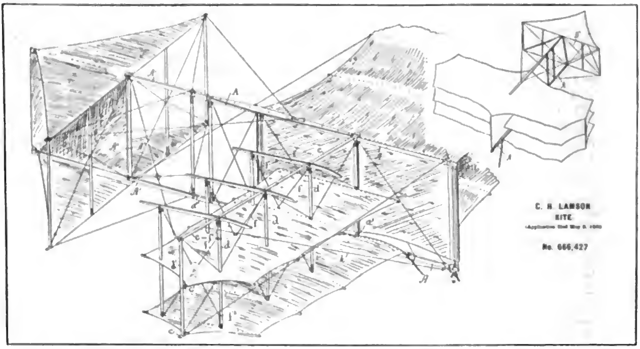
The larger illustration gives a perspective view of the Lamson kite with the covering removed from the upper wing on one side. The tilting is effected as follows:

> "A general adjustment is made by guys 'K,' each of which is secured at the front lower corner of the frame 'A' and at the under side of the upper arm 'C' by screw-eyes, or by other suitable means. By adjusting

> the position of these screw-eyes a general adjustment of the wings on each side may be made. A more delicate adjustment is obtained • • • by loosening one of the diagonal tie-wires of the panel and tightening the other. The simple means here shown for accomplishing this result are two loops *f*, adapted to slide on the uprights *d*, each of the two diagonal tie-wires passing through one of these loops. By sliding both of these loops up or down the inclination of the ribs to the horizontal is adjusted with great precision."

Bibliography of Aeronautics.

A "Bibliography of Aeronautics" has just been issued as Volume 55 of the Smithsonian Miscellaneous Collections. Nearly one thousand pages are required to present the 13,500 references which have been arranged alphabetically by authors, subjects and titles covering the subject down to July, 1909. Mr. Paul Brockett, the Assistant Librarian of the Institution, is the compiler of this valuable contribution to science, and in his introduction he pleasantly reviews the long association of the Institution with aeronautics. There have been published by the Institution two papers on the general subject of aeronautics, and thirty-five publications on various phases of the subject, since 1861. In greater detail Mr. Brockett reviews the splendid contributions of Secretary Langley to this fascinating science. He tells of the publication of his "Experiments in Aerodynamics" in 1891, and then of his further technical contribution on "The Internal Work of the Wind," in 1898. Very briefly is the story told of Langley's two epoch-making flights with heavier-than-air machines. This bibliography is a worthy tribute to the memory of the Smithsonian's late Secretary, and much credit is due to Mr. Brockett for his careful and painstaking compilation.



Army News.

During the last month at Fort Sam Houston, Lieut. B. D. Foulois made six flights in the Army's Wright aeroplane, the longest being one hour and two minutes. High winds and considerable rain prevented flights on most of the days. Lieut. Foulois also had other duties in addition to aeronautical service.

Three instructors and seventeen student officers of the Army Signal School from Fort Leavenworth were on temporary duty at Fort Omaha from May 10th to 15th. Captain C. De F. Chandler was ordered from Washington to Fort Omaha as instructor; two lectures were given and also practical instruction in the generation and compression of hydrogen, spreading and inflation of balloons; the Drachen captive balloon made several ascents, and there was one free balloon trip with Captain Chandler as pilot, and Captain R. J. Burt and Lieut. W. N. Haskell as aids. Signal Corps Dirigible Balloon No. 1 was also used, being manned by Captain Charles De F. Chandler as pilot and Lieut. Haskell as engineer.

Record Kite Flight.

A new world's record in high kite flying was made on May 5 by the Mount Weather Observatory, 23,800 feet, at which point twenty-nine degrees below zero were recorded, the lowest ever registered by a kite-carried instrument. The previous record was also held by this station of the Weather Bureau. The nearest approach to the three Mount Weather records of more than 23,000 feet was made at Berlin, Germany, March 25, 1908, 21,320 feet.

Balloon Record Made Official.

The Board of Governors of the A. C. A. have made official the United States endurance and altitude record established by Messrs. Clifford B. Harmon and Augustus Post on their trip in the balloon "New York" from St. Louis on the 4th of last October. The duration figure is 48 hours 26 minutes, and the altitude is 16,615 feet. A much greater altitude was actually attained, but the barograph only recorded to this height.

Foreign Letter

By Greely S. Curtis.

Paris, June 10, 1910.

The immediate neighborhood of Paris has been very quiet for the last few weeks, so far as aviation is concerned. This is due to the unseasonable weather, which during almost the whole of that time has been either windy or rainy, or both windy and rainy. Two or three hail storms have been thrown in for good measure.

A week ago, however, M. Bleriot, at the suburb of Issy-les-Moulineaux, flew on his monoplane before the Chinese Prince Tsai Tao with, I understand, profitable commercial results. Another attempt by a less practiced hand on May 14th was less successful, the aeroplane being upset by a gust, with some damage to the apparatus.

On May 19th, the weather again permitted flights at Issy just at sunset, and I watched two Bleriots and a Sommer biplane manoeuvre at will above the wide parade ground. Captain Maurice Clement also flew very steadily in the large Clement-Bayard biplane driven by a 4-cylinder 40 h. p. Clement motor fitted with a clutch and gear between the motor and the propeller. Capt. Clement preferred to make his turns while running along the ground, and stuck to low, straightaway flights. His biplane is controlled by means of auxiliary stabilizers of the Herring-Curtiss type.

A Swiss aviator, M. Audemars, was out with his Santos-Dumont Demoiselle. This monoplane traveled very fast, but its pilot also habitually flew low and made his turns almost entirely on the ground. A Voisin cellular biplane was exercised up and down the field, but I did not see it leave the ground completely at any time. It seemed to be quite unstable laterally, even in the comparatively calm weather which prevailed. There were in addition two experimental monoplanes, one a Vendome, which also ran briskly across and around the field. But they, too, kept always in touch with Mother Earth. The exhibition as a whole impressed me with the caution of the French aviators while practising.

The Santos-Dumont Demoiselle is certainly an ingeniously designed and compact little flyer for lightweight pilots. It is a reduction of the aeroplane to its present day minimum limits, and is at the same time an unusually speedy machine. Some eight or ten of these little monoplanes were in the Clement hangar at Issy awaiting their tryouts. Among them was the one which I ordered last December, jointly with Mr. S. A. Reed of New York, for experimental flights around New York City. Before the weather had cleared enough to permit a trial, I had decided to change to a Bleriot. Apparently no one of my weight had ever piloted a Demoiselle (I weigh over 80 kilos; Santos-Dumont is reported to weigh 48 kilos), and the owners of the other machines at Issy were mostly in the featherweight class. In spite of their light weight, however, minor accidents to the apparatus on landing were frequent, and most of the machines at Issy had been reinforced at several points. In view of these and other considerations—the Bleriot, for instance, should be easier to repair after an accident—it seemed advisable to change to the larger and heavier apparatus.

M. de Lesseps' feat of crossing the Channel aroused some interest, but no very great enthusiasm. "Le Temps" of the next day, in fact, left him still in the air, as it recorded his departure from French soil Saturday afternoon and had no report of his coming down again, either on this or on the other side of the channel, or even in the channel itself. Consequently as late as Sunday afternoon rumors reported both success and failure.

I have just returned from an all-day trip on the invitation of M. Henri Farman to the aviation grounds at Mourmelon, near Rheims. Unfortunately M. Farman was not there, but his courteous chef d' atelier, M. Fremrl, showed me through the works. The shops are largely of temporary wooden construction, one story high. They are building two types of Farman biplane, both of which carry the high grade Gnome rotating motor. The lighter model has the lower plane some twelve feet shorter than the upper plane, the upper plane in both models being about 35 feet long. The special cloth used is given a smooth waterproof coating after attachment. The cloth is not mounted on the bias, but has the threads parallel to the main dimensions of the machine.

Unfortunately a sharp thunderstorm prevented flying most of the time I was at Mourmelon, but toward evening it cleared off and three or more machines took the air. These included a standard Farman, an Antoinette, and a new model Voisin, with ailerons of the Herring-Curtiss type instead of the familiar vertical panels. The Voisin Company are putting this new style on the market for racing purposes. This change marks the final adoption, by all the prominent French builders, of the Wright method of stabilizing.

The Bleriot, Santos-Dumont, Grade and Tellier are direct copies of the Wright patented invention, while the new Voisin and Clement biplanes follow the Herring-Curtiss modification by using independent stabilizing planes. The Antoinette, Farman and Sommer machines infringe by employing hinged flaps or ailerons on the main planes.

The editor of *L'Aerophile* expressed his gratification and interest when I presented the card of AERONAUTICS. He was naturally familiar with the publication, and much interested in our attempts in America to improve on and avoid the Wright patents. In France they find it difficult to understand the legality or justice of the Wrights' position. It is so obvious to foreigners that the widespread practice of aviation in the United States is smothered by the Wrights that they cannot understand the American acquiescence in what appears to them to be unjustifiable tyranny.

The photographs of the successful Newburyport flights of the Burgess "Flying Fish" aroused the interest of French constructors and aviators, as this is the first successful model, other than the cellular Voisin, which is completely secure against infringing the Wright patent. The first Burgess production is more accurately termed the "Herring-Burgess Flying Fish," as Mr. A. M. Herring personally contributed to the design. This designation, however, leads immediately to confusion with the better known Herring-Curtiss flyer, which is not free from legal difficulties with the Wrights. In this connection, a late issue of *The Car*, London, contains an illustrated description of the Burgess biplane in flight under the heading "The New Curtiss Biplane." The confusion between the two rival machines was perhaps increased by the fact that I was piloting Mr. Burgess' "Flying Fish" when the latter was photographed. Needless to say, Mr. Glenn H. Curtiss, the famous aviator, and I are not identical.

Speaking of the Wright patent, the Paris edition of the *New York Herald* had most interesting news about the revolt against the agreement between the Wright Co. and the Aero Club of America. The new American Aeronautic Association has a wide field of usefulness before it. May it fill it wisely.

Aeroplanes are being exported in large numbers, many of them going to Russia and England. The Farman factory reported that four of their biplanes had been shipped the day before my visit, while the output of the Ateliers Bleriot is said to be approximately thirty a month.

Builders are still hunting for the best motor, and those which give good satisfaction are difficult to secure without a long delay. M. Bleriot took me over all his well-kept works and showed me monoplanes fitted with the following motors; Anzani 3-cylinder, V shape, 25 h. p., air-cooled;

Clement 2-cylinder, horizontal, 30 h. p., water-cooled; Picker 4-cylinder, vertical, 40 h. p., water-cooled; Gnome, 7 cylinder, rotating, 50 h. p., air-cooled. Mr. Bleriot has mounted a Clement 30 h. p. on my machine, but is ready to provide any of the other motors according to the preference of his customers. An experimental monoplane, designed to avoid the Wright patent, was observed under construction, but it was not sufficiently far advanced to justify description.

Another French monoplane should reach New York before long. This is one of the large and high powered Antoinettes which it is said that Mr. Harkness is taking in under bond for temporary exhibition purposes.

The death of young Hauvette-Michelin in his Antoinette at Lyons seems to have been singularly unnecessary. An eye-witness tells me that the monoplane was rolling along the ground when it knocked over the turning stake, and that Hauvette-Michelin made no attempt to dodge the stake as it fell across his craft. Many of those looking on were astonished to learn that he had even been injured by the fall of the post. The dent which the spar made in the light frame work of the aeroplane is clearly visible in a photograph.

Many of the French aeroplanes, particularly those driven by Gnome motors, carry speed indicators to show the pilots at all times the speed at which the motor is revolving. The indicator most generally in use is made by Chauvin and Arnoux. It consists of a minute magneto driven by a cord from the motor, the current from the magneto being indicated on a meter graduated in revolutions per minute, which is mounted where it may be most readily seen by the pilot.

An accomplished fellow passenger on the Majestic, after seeing the photographs of the "Flying Fish" in flight, dashed off the following amusing jingle. It evidently belongs in the advertising columns, but perhaps you will let it slip in with this letter, as being the latest word from the other side.

ADVICE.

Don't hitch your wagon to a star,
A tame and time-worn measure,
For planets and their orbits are
Too fixed for perfect pleasure.

But if, my friends, you really wish
The heavens to explore—you
Have but to try a *Flying Fish*—
The skies are all before you.

NON-STOP CROSS CHANNEL AND RETURN.

June 2.—Hon. C. S. Rolls in a Wright machine flew from Dover, England, at 6:30 P. M., across the English Channel to Sangatte, dropped three notes, and returned to Dover in 90 minutes. Large air bags were attached to lower planes.

PRINCIPAL FOREIGN FLIGHTS OF MONTH.

Cross Country Flying.

May 13.—Hauvette Michelin, at Lyons, in an Antoinette, struck in flight one of the poles marking the course. The pole snapped and struck Michelin. Picked up insensible, he died shortly afterward.

NEW PASSENGER RECORD.

May 15.—Nicholas Kinet carried a passenger for 2 hours 51 minutes on a Henry Farman machine.

Wachter flew 2 hours 2 minutes in an Antoinette.

May 16.—Roger Sommer flew across country, Mouzon to Charleville and return, 80 kiloms., in 1 hour 10 minutes.

May 17.—Illner (Etrich) flew from Wiener Neustadt to Vienna and back, 90 kiloms., in 1 hour 14 minutes.

May 19.—Count Lambert (Wright) flew from Vincennes to Gentilly with a passenger.

Cheuret (H. Farman) flew from Mourmelon to Chalons and back, 1 hour 12 minutes.

May 20.—Sommer flew from Sedan to Verdun and return, 160 kiloms., in 2 hours 10 minutes.

At Mourmelon Captain Marconnet flew 1 hour 30 minutes, and Lieutenant Fequant, 1 hour 45 minutes.

NEW TWO-MAN CROSS-COUNTRY RECORD.

May 21.—Maurice Farman with one extra passenger flew from Buc to Etampes, 80 kiloms.

CROSS-CHANNEL FLIGHT.

May 21.—Jacques de Lesseps flew over the English Channel from Calais to Dover, time 42 min. The attempt to return was abandoned. The machine used was a Bleriot XI., Gnome motor. Count de Lesseps is expected to fly at the Montreal meet, June 25 to July 4.

May 23.—Robert Frey flew over Berlin in a Farman biplane in a 35-minute flight.

May 23.—Martinet (H. Farman) flew from Chalons to Neufmontiers, near Paris, a distance of 140 kiloms., in 1 hour 28 minutes.

May 24.—Lindpaintner (H. Farman) flew from Mourmelon to Rheims, 45 kiloms.

Maurice Farman (M. Farman) from Etampes to Toury, 30 kiloms., in 20 minutes.

May 28.—Grahame-White (H. Farman), Brooklands to Ranelagh, 24 kiloms., in 20 minutes.

Louis Paulhan (H. Farman), Verona to Solferino, 36 kiloms., in 30 minutes.

Louis Bleriot, Toury to Etampes, 30 kilometers.

A. Leblanc (Bleriot), Etampes to Toury, 30 kiloms.

May 30.—A. Leblanc (Bleriot), Toury to Chartres, 45 kiloms.

May 31.—A. Euler (Euler) made a cross-country flight from Frankfort of 115 kiloms. in 1 hour 19 minutes.

Aeronautics' Permanent :: :: Exposition :: ::

More exhibits are wanted to make AERONAUTIC'S EXPOSITION of still greater value.

Every manufacturer of anything in the flight industry should have a display for his own sake and that of the development of the Art in general.

It is surprising that such an "infant industry" should be growing so rapidly that manufacturers cannot promptly fill their orders. Still, one must look ahead.

Try to scare up an exhibit for the Exposition as soon as possible and ship it along. If dire necessity calls, shipment of the display sample can be made from the Exposition.

We want to hear from every maker and urge everyone interested to call.

Exhibitors.

Hartford Rubber Works Co., Tires.
Wittemann Bros., Gliders and Supplies.
Warner Instrument Co., Aerometer.
Requa-Gibson Co., Motors and Propellers.
Elbridge Engine Co., Engines.
Pennsylvania Rubber Co., Tires.
C. E. Conover Co., Cloth.
Edwin Levick, Photos.
Philadelphia Aeroplane Co., Motors, etc.
Roebling Co., Wire Cable.
Victor L. Brunzel, Varnish.
El Arco Radiator Co., Radiators.
J. A. Weaver, Wheels, etc.
Whitehead Motor Co., Motors.
Greene Co., Propellers and Parts.
Bosch Magneto Co., Magnetos.
Auto-Aero Supply Co., Supplies.
R. I. V. Co., Ball Bearings.
J. Deltour, Bamboo.
J. S. Bretz Co., Magnetos, Bowden Wire.
Aero Supply Co., Supplies.
Chas. E. Dressler, Model Maker.
Wm. P. Youngs & Bros., Lumber.
Buel H. Green, Turnbuckles.
Profac Food.

Club News

LOS ANGELES CLUB DEDICATES SHED.

The **Aero Club of California** held its annual picnic on May 29. This picnic was held at the motordrome, where the club now has a hangar, capable of housing sixteen machines. Eight machines are now on the ground and others building.

Some eighty persons were in attendance and the affair was in every way a success. The Cannon brothers towed their big biplane behind an automobile and succeeded in leaving the ground and gliding some distance.

Mr. J. Wood Porter tried out his monoplane gliding machine, towed by an automobile, and mounted by Edgar S. Smith. The plane is circular in shape. The chassis is suspended from a central rectangle, the semi-circular wings being hinged onto this rectangle in such a manner as to allow of movement in a vertical plane like the wings of a bird. The whole surface is also hinged so as to allow the angle of incidence to be changed. The surface comprises some two hundred square feet. After running on the ground for some distance, the machine lifted slightly on one side, toppled over and became a wreck.

Three of the machines now at the hangar have engines and they will be tried out in the near future.

The Aero Club of California offered a cup to the boy making the best showing with aeroplane kites. The following boys of the Boys' Aero Club contested: Harold Scott, Carl Dorsey and John Casey with Farman models, and Edwin Gettings with a tetrahedral kite that he called a bimoplane. Mr. Gettings won the cup with a seventy-foot glide.

The hangar was dedicated by Frank C. Garbutt. Addresses were delivered by President H. LaV. Twining, Charles E. Rilliet, W. H. Leonard, Buel H. Green, William Stevens, R. I. Blakeslee.

The **Pacific Aero Club** held its second annual meeting May 11, 1910. The following officers were elected. J. C. Irvine, Pres.; I. B. Dalziel, V.-P.; C. C. Bradley, 2nd V.-P.; C. T. Shaffer, 3rd V.-P.; H. A. Chandler, Sec'y.; J. M. Masten, Treasurer; Adam Kneiling, Consulting Engineer; A. S. Pare, Consulting Patent Attorney. Directors: A. S. Pare, A. L. Elsner, J. T. Stanton, Jos. Hidalgo and Jos. Rosenthal.

The membership is increasing almost daily, the weekly meetings of the club being well attended. Lectures by people of note in the aeronautical world are features.

Stuyvesant Aeronautic Society. At the annual Mechanics Arts Exhibition of Stuyvesant High School, No. 345 East 15th street, New York, held June 2, the Society exhibited eight aeroplane models. Six of these were of the monoplane and two were of the biplane type.

The Society now has seven members, whose names are as follows: Carroll E. Edson, President; C. Graham Halpine, Vice-President; Percy W. Pierce, Secretary; F. Eugene Robinson, Treasurer; Garford Oliver, Librarian; Bryan Battey, Frederick Fischer.

The **Aero Club of Jacksonville** now numbers more than sixty members. Charles K. Hamilton was recently the guest of the club at a water party. The genial treasurer, W. M. Stimson, kindly placed his handsome motor yacht at the disposal of the club, and after a pleasant trip down the St. John River, with plenty of good things provided, Hamilton was made the first honorary member.

The **Curtiss Amateur Aviation Club** has been formed in Los Angeles, with officers as follows: Ed. Gettings, president; Lawrence Adams, vice-president; Harold Scott, secretary and treasurer.

Hamilton's record, and all of Paulhan's and Farman's, were made on BOSCH-equipped aeroplanes

Ignition information for aeroplanes on request ::

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Material and Workmanship Guaranteed

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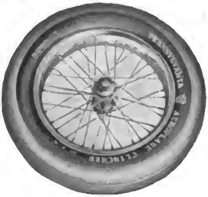
The **Aero Club of Dayton** is anxious to have the next national convention after the one in New York, June 22, held at Dayton. Dr. L. E. Custer has been appointed to be chairman of a committee to represent the club at the convention. The Dayton Aeroplane Club has also appointed three delegates.

Dr. P. M. Crume and Dr. L. E. Custer will represent the club in the balloon race to be held at Washington, July 4th. A committee will be appointed by the club to officially observe any record flights which may be undertaken at the Wrights' Dayton school.

The **Aeronautical Society** still keeps up interest in its well attended meetings. On May 27th, President Hudson Maxim addressed the members on "Aeronautical Warfare." On June 9th, Roger B. Whitman, an expert on ignition systems, lectured on "Ignition." On May 19th another competition was held for the selection of a team to defend the Chanute Model Trophy.

AEROPLANE TIRES



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SIZE	Weight complete
20x4 in.	6¼ lbs.
26x2½ "	6½ "
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Absolutely Nothing to get Out of Order

Runs as smooth as an Electric Motor as long as the fuel lasts.

4 Cylinders (vertical), 8 port exhaust, 2 cycle

75 H.P. 200 lbs. Price $1,400
40 " 145 " " $1,150
25 " 95 " " $950

The Aeroplane season is now on, so order quick. Early Deliveries.

GEORGE A. LAWRENCE, Mgr.,
Astor Theatre Building, New York, N. Y.

This motor has been exclusively adopted by C.& A. Wittemann, Aeroplane Manufacturers

Exchange and Forum

AIDS TO THE AERONAUTICAL ART.

Following are some pamphlets containing valuable information. In all cases, we believe, these can be obtained free by writing to the addresses given.

Some Aeronautical Experiments, by Wilbur Wright.

Aerial Navigation, by O. Chanute.

Relation of Wing Surface to Weight, by R. von Lendenfeld.

Researches and Experiments in Aerial Navigation, by S. P. Langley.

The Greatest Flying Creature, by S. P. Langley.

Experiments with the Langley Aerodrome, by S. P. Langley.

—From Smithsonian Institute, Washington, D. C.

Some Theorems on the Mechanics of High Speed Balloons, by Albert Francis Zahm, Ph. G

—From Catholic University of America, Washington.

The Resistance of the Air at Speeds Below 1000 Feet a Second, by Albert Francis Zahm, Ph. D.

—From Johns Hopkins University, Philadelphia.

Researches on the Forms and Stability of Aeroplanes, by W. R. Turnbull.

Measurement of Air Velocity and Pressure, by A. F. Zahm, Ph. D.

—From the *Physical Review*, Ithaca, N. Y.

Atmospheric Friction With Special Reference to Aeronautics, by A. F. Zahm, Ph. D.

—From the Philosophical Society of Washington.

A LETTER TO DICK FERRIS.

San Francisco, Cal., June 1, 1910.

Editor AERONAUTICS.

Dear Sir:

In a letter from Mr. Dick Ferris, published in your June issue there are certain remarks that I take exception to, and beg that you will publish this letter.

As your representative at the Los Angeles Meet it would have been decidedly unethical and improper to have taken sides in any local differences or controversies, and if you will re-read my report (March issue) you will see that this was not done, that it was unbiased, in no way misleading or derogatory, nor did it ignore Mr. Ferris, as he claims. Though he should have been given a great deal more credit for his executive ability in handling the meet. This was such a widely known fact that I, unfortunately, did not enlarge upon it further than to state that Mr. Ferris was one of the conceivers, and acted as manager.

As far as "petty jealousies" go, this charge is absolutely and obviously ridiculous, as I reside in San Francisco, am a vice president of the Pacific Aero Club, have been actively interested in and have written on the subject of aeronautics for a number of years, and our fields of activity in no way conflict.

Regretting that the fairness and impartiality, which I believe has always characterized my reports, has been questioned, and assuring both you and Mr. Ferris that no injustice was intended, or done, I am

Yours very sincerely,

CLEVE T. SHAFFER.

MOLLER AFTER GOULD PRIZE.

Referring to engines of the twin type with two propellers, for which Edwin Gould offers a prize of $15,000, we had the pleasure of seeing a new construction in a two-cycle, double acting twin engine, designed by J. A. Moller, of New Rochelle. This engine looks very feasible and ought to fill the bill for aeronautic purposes. It has a special cooling device and can be built either air or water-cooled. Mr. Moller has been studying aeronautic devices a good many years and would like the co-operation of some gentleman for the advance of the art.

PARTNER WANTED.

I have invented and applied for a patent on a gasoline motor. It is of very efficient design and only weighs 2½ pounds per horse power. It can be manufactured, I believe, cheaper than any equally good motor on the market. I need a little financial assistance to market this motor. I would like to form a partnership with some one who will put up the little cash required. Would make very liberal terms with right party. R. E. LEE, Deposit, N. Y.

NEW DEVICE FOR CONTROL.

John C. Press, of South Norwalk, Conn., has devised a system of lateral control which he says is the most ingenious, unique and effective yet brought out, and does not infringe on the Wright patent. It accomplishes, he says, the same results as the warping and tilting devices used at present without changing from the horizontal, and gives great lift without appreciably increasing head resistance, and that, as there is no turning movement, the rudder does not require to be operated in conjunction with the device.

Mr. Press is anxious to get in touch with someone to assist him in establishing his claims.

ANOTHER LETTER TO MR. FERRIS.

Los Angeles, June 5, 1910.

To the Editor of AERONAUTICS.

Sir: As to the statements made by Mr. Ferris in his letter published in the last issue of AERONAUTICS, I wish to call attention to the following misapprehensions under which Mr. Ferris seems to be laboring. The Aero Club of California came into existence some seven months before it ever heard of Mr. Ferris, and it was not through any initiative on the part of Mr. Ferris that the Aero Club was organized.

This club was organized in May, 1908, and it was in full swing in the fall of 1908 when Mr. Ferris pulled off his balloon race.

From the time of its organization this club has held continuous weekly meetings or semi-weekly meetings, and at no time in its history did it disintegrate or show any signs of disintegrating.

It applied for affiliation with the Aero Club of America six months before the international mid-winter meet was heard of, but, owing to the slowness of procedure, it did not receive the papers until the movement for the midwinter meet had been thoroughly launched.

Mr. Ferris' statements also do rank injustice to the members of the committee of the Merchants' and Manufacturers' Association, of which committee he himself was a member. If it had not been for the Merchants' and Manufacturers' Association the Los Angeles meet would never have taken place, and it was the business acumen of this committee that made the meet such a financial success.

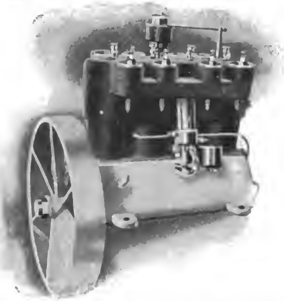
I do not wish to detract at all from the credit due to Mr. Ferris for the energy displayed by him in bringing this meet to a head, as it would not have taken place had it not been for him also, but I do object to his misstatements with regard to the Aero Club of California and his attempt to belittle everybody else connected with the meet, and to magnify himself.

Yours very truly,

H. LAV. TWINING,
President Aero Club of California.

Detroit Aeronautic Construction Co.

Builders of Light Weight, High - Power
MOTORS, PROPELLERS and RADIATORS



OUR motors combining compactness, simplicity and power, are the result of twenty years of practical gas engine construction. A card will bring our circular with full description.

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Four Cylinder 4½ x 4½ in. 30 to 40 H.P., complete with radiator and 6-ft. x 3½ ft.-pitch propeller, $650 Weight per outfit 175 lbs.

Four cylinder 5x5 in., 40 to 50 H.P., complete with radiator and 7-ft.x4-ft.-pitch propeller $750 Wgt. per outfit 200 lbs.

Six cylinder 5 x 5 in., 60 to 70 H.P., complete with radiator and 8-ft.x4-ft.-pitch propeller $950 Wgt. per outfit 240 lbs.

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— Patents Pending —

GUARANTEED as to flight. Guaranteed as to freedom from infringement of other patents. A new aeroplane perfected upon simple and practical lines. It has a new scientific method of control which is an improvement on what has been done before. It is like the others, but is based upon a different and improved principle of operation; and you will not be stopped by patent litigation.

¶ If you are in the exhibition business, if you desire to take up the selling of aeroplanes as a business, if you want an aeroplane for sport, communicate with me. A request from you for further details will convince you of the absolute correctness of these statements.

Israel Ludlow 2686 BROADWAY New York City

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The Buyers' Guide

Trade Notes

TO OUR FRIENDS.—We would appreciate it very much if you would specify in writing advertisers that you saw the ad. in AERONAUTICS. This will help us, and eventually be of equal service to yourselves.

Curtiss Uses Palmer Tires.

The B. F. Goodrich Company of Akron, Ohio, has just received a letter from Mr. Glenn Curtiss, written immediately after his recent record-breaking flight along the Hudson from Albany to New York City. Speaking of his equipment in that flight, the Palmer Aeroplane Tires, which are of Goodrich manufacture, he said: "The Palmer Tires, with which I equip all of my aeroplanes, give the best of satisfaction for the purpose. The light weight does not greatly impede the lifting power of the machine, and the great resiliency enables me to land without shock on the hardest ground and to pick up speed quickly in starting. I am glad to credit a part of the success of my aeroplane to the Palmer Tire."

Mr. Curtiss used the Palmer tire on the winner of the International Aviation Cup, Rheims, France, last autumn, and on the winner of the world's record for short distance rising from the ground, at the aviation meet, Los Angeles, California, this year.

"The light weight which does not greatly impede the lifting power of the machine, and the great resiliency" which allows the plane to land without shock, were particularly important in the Albany-New York flight, when two landings were made on the way for supplies, and yet the distance was covered in phenomenal time, and with remarkable ease.

The Sacramento Aerial Co., was incorporated in April for $25,000. They are building two machines which will be done about June 10th. A lot has been leased where a factory will be erected for the manufacture of all kinds of aerial craft. It is the intention of the company to manufacture a motor which will have many improvements over anything that has been put out so far.

The Gill-Dosh aeroplane which made its debut at the Los Angeles Meet, has made over fifty short flights. This was on the Curtiss order, but had a heavy automobile motor. A new model, different from anything on the market, is nowing being made and will be flown at the St. Louis Meet for novices.

Several machines on the Coast have made short flights with the Hall-Scott motor, which is comparatively new to the aeroplane world. These are as follows: Wiseman & Peters, Farman type biplane, at Santa Rosa, Cal.; Frank Johnson, Curtiss machine at San Jose with Harold Hall as aviator, and Roy Crosby's Greene biplane with Harold Hall, rider.

Aero Motor for $250.

To fill the steadily increasing demand for a light weight aeronautical engine, the Detroit Aeroplane Co., of Detroit, Mich., has undertaken the rather difficult task to put a new motor on the market for the most popular price of $250.

This company has been incorporated under the laws of Michigan for $20,000, with F. Weinberg president, for the purpose of manufacturing aero motors and other devices. The firm of Wilcox & Carlson Co., of Detroit, makers of marine engines, has been bought out.

The engine is a two-cylinder of the double opposed type, four cycle, and has a bore of 5 in. and a stroke of 5 in., and the speed range is between 700 and 1,500 r. p. m., developing between twenty and thirty horse power according to speed and load. The weight is 98 lbs. Both valves are placed in the cylinder head, and all four valves are operated by one single cam, in this way eliminating a large number of parts, manufacturing cost and trouble. The advantage of this arrangement is largely due to the fact that by timing one valve the others are timed at the same time. Both valves can be detached with their valve cages by loosening only two screws, at the same time giving free view of the cylinder inside and the piston. The engine being air cooled is especially designed for this purpose, inasmuch as valve sections have been employed of an enormous area, the exhaust valve, for instance, being 3¼ in. in diameter. On the other hand, the extreme large flanges have been arranged in double distance as customary practice shows. This is done to avoid the reciprocating action of the radiation from one rig to another, and has been thoroughly tested out on French and German motors.

By means of the double throw crank shaft, the pistons are forced in opposite directions, and as a result, a bright stream of air is thrown steadily inside the crank case and cylinder by each revolution, which helps considerably to bring the temperature of piston and cylinder walls down. This in connection with the arrangement of both cylinders opposite from each other, and the wide spread of the cylinder heads which are directly exposed to the cooling air draft of the propeller, warrants a most efficient cooling under propeller load.

The lubricating system is splash, and the crank case, therefore, is oil tight and from the best aluminum alloy. It contains, besides a lubricant, all moving parts of the engine, as crank shaft, timing gears, cam, connecting rods and pistons. The hollow double throw crank shaft is perfectly balanced and made from 40 to 50 pt. high carbon steel, heat treated and mounted against thrust by a New Departure ball bearing, which feature enables a direct attachment of the propeller. All other bearings are made from best white brass, and are most liberally dimensioned and replaceable. This is the strongest keynote of the motor, which is not only as light, but as durable as possible, and distinguishes itself from all other light weight engines, because it does not need the care of any expert, but can be handled most successfully by amateurs.

Connecting rods and pistons are being weighed thoroughly, and this in connection with the balanced crank shaft is a most satisfactory running system. There are some other points of refinement employed in the design, one of which is that all the strain of the cylinder and crank case is converted into compression instead of pulling stress.

The gasoline tank may be mounted in or above height of the engine, as the carburetor is attached to motor on its lowest point of the crank case, forming with the latter a compact unit. The crank case itself is provided with flanges for the purpose of fastening to the frame of the aeroplane.

The design, in connection with the very best material used, and the very best workmanship obtainable, warrants a first class product. This, in connection with a large output and in always keeping a number of ready tested engines in stock, enables the company to market this motor for only $250. This price includes the ignition system, consisting in snaptimer provision being made for attachment of magneto.

Propellers are made and attached to motors on special request, and are kept in stock in sizes between 5 and 8 ft. diameter and 3 to 7 ft. pitch, these propellers being the sizes which the motor is able to pull successfully without overheating or destructive effect.

Catalogs are sent on special request. The company asserts that the price is so low that even the most modest aeroplane manufacturer can obtain a powerful engine at a reasonable price.

Wittemann Catalog.

C. & A. Wittemann, Stapleton, Staten Island, N. Y., have gotten out quite the finest aeronautical catalog yet issued anywhere. It contains a full list, illustrated, of parts, gliders, wheels, etc., and the Whitehead engine.

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OFFERS REAL BENEFITS

All interested in the Art will be benefitted by becoming members.

DUES $10 PER ANNUM
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NO association in the world has accomplished as much.

If you desire to learn what the Society has done for the Art in the last eighteen months, send for the brochure just published reciting the accomplishments from the formation of the Society in July, 1908, to December, 1909. It is practically a history of aviation in the U. S. during the above period.

For the purpose of increasing the sphere of usefulness the membership should be augmented. Every additional member advances the general good.

¶ **Address the Secretary for booklet and application blanks at P. O. Box 28, Station D, New York; or 1999 Broadway, where weekly meetings are held.**

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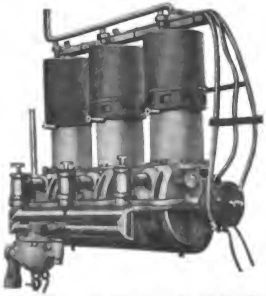

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Cylinders—Wrought Steel. **Water Jackets**—Wrought Steel. WELDED to Cylinders. **Crank Case**—Aluminum Alloy. **Shaft**—Hammer Forged Steel. **Bearings**—Drawn Phospher Bronze. No leaky screw joints—every joint **Welded.**

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READY TO FLY

With Non-Infringing Equilibrium Device

25% cash with order, balance C. O. D.

THE SANFORD MFG. CO., 45 DEWEY COURT BRIDGEPORT, Conn.

Propeller Tests Well.

A test of a propeller, the design of which is new, made by the Requa-Gibson Company, was made at the Curtiss place in Hammondsport on June 4. Hugo C. Gibson had gone to the factory of the Elbridge Engine Co., at Rochester, to make tests of the propellers on the Elbridge engines. Six propellers were taken, one of which was of the new type. Owing to the rush of business, there was but one of the large engines available, and that had been delivered to Glenn H. Curtiss. So the tests had to be made at Hammondsport. The engine was hung in a frame suspended from the ceiling, and on a spring balance attached to the wall the thrust was read. The 7-ft. diam., 4-ft. pitch special propeller showed up 337 lbs. at 860 r. p. m., the engine developing at the time 26 h. p. With the balance of the power of the motor to draw on, the new propeller should show great speed possibilities and economy in gas consumption.

Fred Shneider Busy.

Three more aeroplanes, combination Farman and Volson types, will be delivered by the end of the month. One will be equipped with a 3-cylinder, 30-35 h. p., and the others with 4-cylinder, 40-160 h. p. Elbridge motors. One is for one Castellano, who used to loop the loop on a bicycle; one is for Nicholas Rippenbein, of Perth Amboy, and the third is for Mr. Shneider himself, if someone doesn't buy it in the meantime, to try out some new devices.

Manufacturers Please Note.

A. H. Hofer, 2035 Michigan avenue, Chicago, Ill., would like to get catalogues of all aeronautic supplies. He expects to construct a biplane of about the same dimensions as the Curtiss.

Many Aeroplanes Sold in Washington State.

The Hamilton Aero Mfg. Co., of Seattle, Wash., have built and sold six machines, including several biplanes, and are now building two biplanes for the international meet, to be equipped with an Elbridge 40-60 h. p. motor and a Requa-Gibson propeller. They already have seven orders for "Dumonoplanes" and biplanes. Many orders are turned away because they cannot make immediate delivery.

The Whitehead Motor.

The first aeroplane to be fitted with a Whitehead motor is that of Chas. W. Miller. Following are the details of the motor:

The engine is highly finished and has specially tempered steel cylinders with steel water jackets welded in place. Under hydraulic pressure the jackets stand a pressure of 600 lbs. to the sq. in. Forced circulation is maintained at high speed by a gear pump.

The engine is of the two-cycle type, with eight port exhausts to each cylinder. No carburetors are used, a special Whitehead vaporizer being provided for each cylinder. Ignition is Bosch magneto.

The intake is automatic, and is through a valve located in the center of the piston head. The crank case is divided into four compartments, which serve as pre-compression chambers, and in which the gas is compressed to 20 pounds per square inch, previous to being admitted into the explosion chamber.

When the exhaust takes place, the relief of the pressure in the explosion chamber enables the lower pressure in the crank case to force the valve open, admitting the new charge into the explosion chamber, coincident with the escape of the dead gases through the exhaust ports.

On the upward stroke a compression of 95 lbs. is reached, which is considerably in excess of that of any other motor, resulting in increased power. The exploding charge is at 300 lbs. per sq. in.

The bore is 5 in. and the stroke 5½ in., making it a low speed, high powered engine.

The cranks are set at quarter turns, making vibration almost negligible. Being a two-cycle type, the power is increased over a four-cycle engine of the same bore and stroke, there being four explosions for each revolution of the crank shaft, as compared with two explosions in the four-cycle type.

Thus a four-cylinder, two-cycle engine, such as the Whitehead, is theoretically much more flexible than a six-cylinder, four-cycle automobile engine, and is equal in flexibility to an eight-cylinder, four-cycle engine.

The oiling system is both by splash lubrication and mechanical oiler. The bearings are five in number, of phosphor-bronze. There is also a thrust bearing on the crank shaft to prevent the breaking of the crank case from the pressure of the propeller.

The construction of the cylinders of the Whitehead engine is unusual, as they are bored out of a solid billet of chrome nickel steel and subjected to numerous temperings.

The steel sheet water jackets are welded in place by the oxo-acetylene process, so that there is no danger of a break in the water-cooling system. There is in the Whitehead engine no packing whatever, and all its working parts are of the utmost simplicity.

The crank case is of aluminum alloy, and the cylinder bolts run all the way through the crank case, thus giving much more than the usual solidity of construction.

Incorporations

Newell Aerial Navigation Company of Seattle. $100,000; Frank A. Newell, R. McA. Redpath, John H. Casebier, Carl J. Lindquist and William V. Osborne.

Western Aeroplane Exhibiting Company: Harry B. Snell, R. W. Lawson, Frank J. Boot, Jr., Harold S. Boot, Alva A. Ingersoll; $50,000; Denver.

The Twin City Aviation & Exhibition Co. has filed articles of incorporation with the Secretary of State; capital $50,000. The incorporators are L. N. Scott and William J. Murphy of St. Paul; H. E. Pence, J. J. Barclay, W. E. Wheeler, A. W. Strong, H. E. Wilcox, L. H. Fawkes and F. E. Murphy of Minneapolis.

Marquette Aeroplane Co., Indianapolis, Ind., $10,000.

Portland Aeroplane Co.; principal office, Portland; capital stock, $5,000; incorporators, Frank Bettmann, Arthur Langguth and P. A. Taylor.

Patent List

NOTE:—IN THE FUTURE ALL PATENTS LISTED WILL SHOW DATE OF FILING AS WELL AS DATE OF ISSUE, IN RESPONSE TO THE SUGGESTION OF A SUBSCRIBER.

Igo Etrich and Franz Wels, Oberalstadt near Trautenau, Austria-Hungary, 952,317, March 15. FLYING MACHINE. The invention consists of an aeroplane wing having a forward convex curved edge and rear concave edge and rounded end portions, while at bottom of the plane the front is concave and rear convex.

Rudolph G. Dressler, Coney Island, N. Y., 952,886, March 22. AMUSEMENT FLYING MACHINE. Two posts spaced apart and flexible rope extending across at the top and bottom with rotating drum to operate the rope and a toy flying machine attached to the rope at the top so as to be moved in imitation of flight from one post to the other.

Daniel C. Funcheon, Denver, Colo., 953,198, March 29. FLYING MACHINE. This invention consists in supporting a car by means of kites flexibly connected thereto. Propellers are provided at the sides and rear of the car to control direction and the rear propeller is movable vertically on its bearings so as to raise or lower the apparatus.

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Johannes Schilling, Colonie Grunewald, near Berlin, Germany, 954,215, April 5, 1910, filed June 2, 1909. BALLOONS. This invention relates to a method of insulating balloons, more particularly dirigible balloons, by providing a jacket around the gas chamber and filling said chamber with an inert gas, that is a gaseous fluid freed from oxygen such as the exhaust gases from a motor.

Edward J. Augsberger, Philadelphia, Pa., 953,810, April 5, 1910, filed April 8, 1909. FLYING MACHINE consisting of an aeroplane (of any type) proved with front and rear planes at the sides of the main plane or planes. These side planes are inclined from the horizontal, the front planes inclining upwardly from the inner to the outer ends and the rear planes inclining in the opposite direction.

Albert Koegler, San Francisco, Cal., and Kamillo Stelzer, Jr., Dresden, Germany, 954,574, April 12, 1910, filed March 3, 1908. MEANS FOR STEERING FLYING MACHINE. This invention contemplates a supporting frame, above the basket or chassis, for a motor hung in a universal joint. Above the motor extends a sleeve and inner shaft caused to rotate in opposite directions, by means of bevel gears, and air vanes are secured to each. By changing the angle of inclination of the motor and air vanes, the apparatus may be steered in any direction.

Anna O. Hagstedt, New York, N. Y., 954, 733, April 12, 1910, filed Feb. 18, 1909. FLYING MACHINE consisting of a body having two motors described as a main and auxiliary motor. Propelling means comprising front and rear propellers in addition to supporting means in the form of a plurality of flapping wings are operatively connected to both motors.

Gustave H. Brekke, Seattle, Wash., 955,049, April 12, 1910, filed May 16, 1908, renewed, Nov. 10, 1909. AIRSHIP comprising specifically a helicopter construction of oppositely rotated propellers supported on vertical shafts, one within the other, and means for swinging the propellers to and from an inclined position. The upper end of shafts being broken and provided with universal joints.

Lagar R. Culver, Salt Lake City, Utah, 955,389, April 19, 1910, filed May 5, 1908. AEROPLANE, the novelty of which lies in a kite-shaped frame supported on a wheeled chassis. The frame is integral with the planes and is pivoted at the front corners so that each side may be raised or lowered independently. The tail is similarly pivoted and hand levers are connected for manual operation.

Nikolas Rueben, Aix la Chapelle, Germany, 956,428, April 26, 1910, filed Sept. 1, 1909. AIRSHIP HALL with temporarily removable roof. A hangar consisting of gable side walls and pillars and rafters constructed to swing on said walls to vertical position, the rafters being divided in the middle to form a slanting roof when in normal position. The roof covering is slidingly arranged on the rafters and movable in divisions.

Henry C. Schanze, Sr., Camden, N. J., 956,648, May 3, 1910, filed Nov. 25, 1908. DEVICE FOR AERIAL NAVIGATION. A housing provided with propellers above and at each end, the former rotating on vertical shafts and the latter on horizontal shafts. Quadrants are secured at the ends of housing for supporting the horizontal shafts and means are provided for quadrants and propellers for the purpose of steering.

Rudolph Gendts, New York, N. Y., 957,205, May 10, 1910, filed April 29, 1909. AIRSHIP. A rigid cigar-shaped gas balloon provided with compartments separate from the gas. An open air compartment at the top serves as a passenger car. Below this a compartment houses the power plant which through transmission gears operate vertical and horizontal propellers. Double rudder blades are provided at the rear on each side of envelope connected together by rods and operable simultaneously by transmission to a steering wheel in passenger car compartment.

William W. Christmas, Washington, D. C., assignor of 49,100 to Creed M. Fulton and Thomas W. Buckey, Washington, D. C., and Lester C. McLeod, Astoria, Ore., 957,744, May 10, 1910, filed Oct. 30, 1909. FLYING MACHINE. An aeroplane consisting of a plurality of separate, independent, suitably spaced supporting planes of concave-convex form in the direction of their length, transversely to the line of flight, the concave sides being towards each other. The upper supporting plane has also an intermediate air gap and is warped to present air guiding surfaces leading to said gap.

Louis Arnhelter, Jersey City, N. J., 958,460, May 17, 1910, filed Oct. 6, 1908. AIRSHIP. An aeroplane having the following characteristics: A frame-work on wheels supports in the center a large sustaining surface of arch shape open at the front, rear and bottom. Located at each side of main surface a smaller surface of same style is provided. Within the large arch adjustable propellers serve to propel forward or backward while under the side arches a propeller at each side raises or lowers.

John Hoskine, Detroit, Mich., 958,747, May 24, 1910, filed June 14, 1909. FLYING MACHINE, comprising aeroplane surfaces and a helicopter above them so arranged that upon a rapid downward movement the spaces between the blades are automatically closed and an outwardly and downwardly extending rim surrounding the helicopter enables it to act as a parachute.

Frederic W. Schroeder, Kennington, London, England, 959,266, May 24, 1910, filed Nov. 4, 1909. AERIAL SHIP. A combination of helicopter, gas bag, lifting vanes and parachute. A series of lifting propellers arranged in pairs on vertical axes to rotate in opposite directions are connected with auxiliary lifting vanes lying below and across the main blades of the propellers. Vertically disposed gas bags are carried below the frame and above a series of parachutes are arranged normally collapsed and adapted to expand automatically when any downward velocity is acquired.

Marcel Kapferer, Billancourt, France. Assignor to Societe Aronyme "Astra," Billancourt, France, 958,926, May 24, 1910, filed Sept. 11, 1909. DEVICE FOR FEEDING BALLOONETS ON AIRSHIPS, comprising a pipe within which is a flexible partition running longitudinally and being of a width equal to half the circumferential development of the pipe. A flexible spherical cap, attached to the partition, is operable from the outside for the purpose of directing the gas into one or other of the compartments to be supplied.

John Buchanan, Holland, Mich., 959,199, May 24, 1910, filed Oct. 9, 1908. FLYING MACHINE. An aeroplane provided with propeller at the front and rudder at the rear with a car pivotally suspended below and means for adjusting manually the angular relation of the car and planes.

Ascensions

:: :: Two 400-Mile Trips :: ::
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NOTE: ASTERISK (*) DENOTES TRIP OVER 100 MILES.

*Quincy, Ill., May 9.—A Holland Forbes, pilot, in his new balloon "Viking," with J. C. Yates, to Crail Hope, Ky., a distance of 363¼ miles; duration 19 hours 55 minutes, highest altitude, 20,600 ft.

The trip was undertaken with a view of gaining the record duration, altitude and distance, but the poor quality of the gas cut down the supply of sand bags. When the aeronauts landed there was but one bag left out of the thirty-three at the start.

From 6:50 p. m., the time of the start, till 9:00 the next morning, but six bags were used. In passing over Illinois, the balloon suddenly dropped from an altitude of 8,000 or 9,000 ft. and six bags of sand were used to check this sudden descent, which was accomplished just as the trail rope touched the ground. It was found out afterward that a local rain storm probably created a rising column of cold air and caused the drop.

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Considerable ballast was expended in attaining the great altitude. The aneroid was examined at about 2:00 o'clock, and it registered 20,600 ft. At this point the aeronauts were gasping for breath, and this height was maintained for about ten or fifteen minutes. It is supposed the balloon went considerably higher. The instrument was later examined by the makers and it was found that this height was the limit of the capacity of the aneroid.

The gas left only slightly filled the balloon, and as it tended to collapse, it had a corresponding tendency to elongate, hence the pressure upon the rope extending from the base of the appendix to the basket became great. In fact almost the entire weight of the rigging beneath the balloon was forced upon this single line, and at length it parted. This dropped the basket, elongating the balloon so suddenly that the line from the ripping panel to the basket became suddenly taut, tore open the ripping panel four or five feet. The gas rushed out at terrific speed. The result was the immediate collapse of the balloon and its descent to the ground at 2:45 p. m. At this time the 350-ft. trail rope was just touching the ground.

The aeronauts were found unconscious by farmers. Forbes was laid in a lot of poisin ivy vines and suffered from their poison for some days.

Pittsfield, May 11.—Charles J. Glidden, pilot; Rabbi Charles Fleischer and J. J. Van Valkenburgh in the "Pittsfield," to Holden, Mass. Duration 3 hours; distance 75 miles; altitude 5,400 ft.

Pittsfield, May 14.—Charles J. Glidden, pilot, and Jason S. Bailey, in the "Mass.," to Berkshire, Mass. Duration 1 hour 45 minutes; distance 7 miles; altitude 8,700 ft. Snow storm at 4,000 to 8,000 ft.

Philadelphia, May 14.—Dr. Thomas E. Eldridge, Ira Brown and Mrs. D. V. Evans, in the "Phila. II.," to Williamstown, N. J. Distance 20 miles; duration 5 hours; altitude 9,000 ft.

Pittsfield, May 15.—William Van Sleet, pilot; Roswell C. Tripp, Fairman Dick and E. C. Ely, in the "Springfield," to Sharon, Conn. Distance 39 miles; duration 5 hours; altitude 7,000 ft.

St. Louis, May 19.—John Berry, pilot; Prof. G. O. James and Andrew Drew, in the "St. Louis III," at 6:35 p. m., to Carsonville at 7:15 p. m. At 8:30 p. m. another ascent was made from here, landing eventually at 11:20 near Hillview, Ill. Hillview cannot be found on the map.

CROSSES LAKE MICHIGAN IN NIGHT TRIP.

*St. Louis, May 19.—H. E. Honeywell and William F. Assmann left St. Louis in the "Centennial" to make a new distance record. After being in the air 22 hours and traveling 409 1-3 miles, a landing was made at Shiloh, Mich. An altitude of 14,800 ft. was reached.

*North Adams, May 20.—A. Leo Stevens, pilot; Dr. David Todd, Percy Sherman and Charles Somerville, in the "Cleveland," to St. Dominique, Que., in the longest flight ever made from a New England point. Duration 11 hours 52 minutes; distance 219 miles; altitude 11,000 ft.

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WINS THREE CUPS.

The pilot, Mr. Stevens, wins for the first time, until his record is beaten, three cups:

"La Patrie Montreal," to the pilot landing nearest the office of "La Patrie."

"Cortlandt F. Bishop," to the pilot making the longest flight in 1910, starting from a point in New England.

The "North Adams Cup," for the longest distance made from North Adams.

A lower current was encountered which began to drive the balloon towards the States again, and it was thought best to land at Drummondsville. The trail rope was dropped here and the aeronaut called out to a farmer to catch it, but the man's wife held him back. By this time the balloon had come up to a forest where it was impossible to descend, so the trip had to be continued some seven miles further on the return journey. The final landing was made at St. Dominique, Que.

The Automobile Club of Canada's cup for a landing on the island of Montreal does not appear to have been won, as St. Dominique is not on the island.

London, England, May 20.—H. W. Gannett, of the N. E. A. C., made a trip over London and landing at Castle Abbey. Distance 60 miles.

The funeral of King Edward was viewed from the balloon.

Pittsfield, May 21.—William F. Whitehouse, to near Springfield, Mass., in the "Pittsfield." Distance 40 miles.

Philadelphia, May 21.—Dr. George H. Simmerman, Dr. Thomas E Eldridge, Prof. Charles L. Doolittle and A. L. Millard, in the "Phila II.," to Crestmoor, N. J.

Crestmoor cannot be found on the map. Though the balloon was sent up 6,500 ft., on account of the dense clouds, no view of the comet was obtained.

Indianapolis, May 27.—G. L. Bumbaugh and Dr. L. E. Custer, from the Motor Speedway, landing about 10 miles away.

Indianapolis, May 28.—Luzern Custer and C. A. Coey, from the Speedway to Eagletown, about 25 miles.

Pittsfield, Mass., May 27.—J. Walter Flagg, pilot, and W. G. Kelly, in the "Pittsfield," to Springfield, Mass. Duration 2¼ hours; distance 42 miles.

Pittsfield, May 28.—Charles J. Glidden, pilot, and Jason S. Bailey, in the "Mass," to Bethany, Conn. Duration 2¾ hours; distance 75 miles; altitude 7,700 ft.

Springfield, May 28.—Jay B. Benton, pilot; Louis Dederick, Prof. David Todd, Robert Wells and Nelson Waite, left the ground in the "Springfield" but the balloon caught in the wires lining the railroad and the gas had to be let out and the trip abandoned.

St. Louis, June 12.—S. L. Von Phul, pilot, and J. D. W. Lambert, in the "St. Louis III.," to North St. Louis. In descending it was found the rip and valve cords were entangled and the balloon was allowed to drop of itself. The descent was in the Mississippi River.

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"Aeronautics'" New Year.

It is with somewhat more assurance of the ultimate than on three previous Julys that with this issue "Aeronautics" begins its fourth year.

Aeronautical affairs of late have reached a higher plane and the structure of the Art is attached more firmly to the industrial chassis.

In the face of the kindly advice of those foremost on the subject the magazine was started in July, 1907, when a gas balloon was a curiosity and the Wright Brothers' flights were still alleged myths.

With the good will and ready support of these somewhat pessimistic friends, and with the appreciation of those who found "Aeronautics" of interest and value, without a skip the magazine was continued single-handed through three not particularly encouraging years.

It was steep-angle work, you may be sure. No time or pains has ever been spared to make the paper as reliable, accurate and efficient as possible in its heretofore exceedingly limited field. The sun often set and rose again on a day's work, but the heart was in it, and this, perhaps, made the labor lighter.

In launching upon this New Year I want to express my sincere appreciation of the many kindnesses thrust upon the magazine, and may success eventually alight at our doorsteps.

ERNEST L. JONES.

Automatic Stability Problem Solved.

Longitudinal and lateral stability form the two most important problems in the development of the aeroplane. Stability must eventually be automatic.

For some years past Lieutenant J. W. Dunne who was for some time attached to the Balloon Factory at Farnborough, England, but has recently continued his experiments at Sheppey on his own account, has worked at the problem. A biplane designed by him, and piloted by Lieut. Gibbs, actr ally made several flights in Perthshire in th autumn of 1908. Since the beginning of this year flights extending in one case to nearly one mile have been made in the Isle of Sheppey. The machine was recently reconstructed, and was brought out once again and tried on the afternoon of May 27, in a fair breeze. Lieut. Dunne, who piloted the biplane, arose from the ground after a run of some forty yards and, rising to sixty feet, maintained this altitude for some distance, when he let go his grasp of all the steering-levers and absolutely abandoned the machine to the air. Pursuing its free flight with perfect stability and steadiness, the aeroplane covered a distance of just on two miles, when Lieut. Dunne resumed control of his levers in order to clear a high mound, but, being unable to do so, came to earth in a ploughed field. The entire length of the flight was about two and one-half miles. During its free flight the aeroplane gradually rose all the while.

The importance of this achievement need not be insisted upon, it simply proves that the problem of automatic stability is in a fair way of being solved, and as such its significance transcends that of the majority of sensational sporting and exhibition flights. During the whole of its free uncontrolled flight the aeroplane remained absolutely stable. The aeroplane is a biplane; the wings project backwards from the central axis of the machine, and in plan have the shape of a V with the apex in the direction of flight; the wing tip are actually situated in rear of the center of gravity of the machine. Their combined area 1 560 square feet. The machine carries no tail no steering or controlling surfaces of any kind with the exception of a flap hinged to the rear extremity of each wing for effecting horizontal an vertical steering. A 4-cylinder, 50 H. P. "Green" engine drives two propellers revolving at the rear of the surfaces. The wings have a positive angle of incidence near the centre, the angle gradually decreasing towards the tips, where the angle actually negative. The machine weighs 1,700 pounds, the load therefore being about three pound per square foot.

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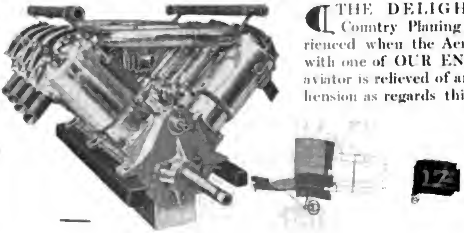

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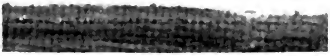

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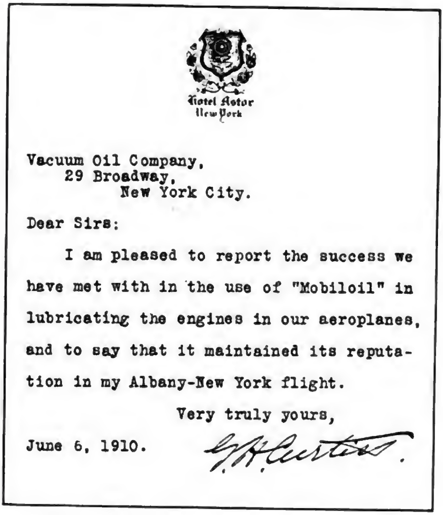

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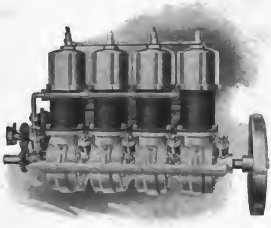

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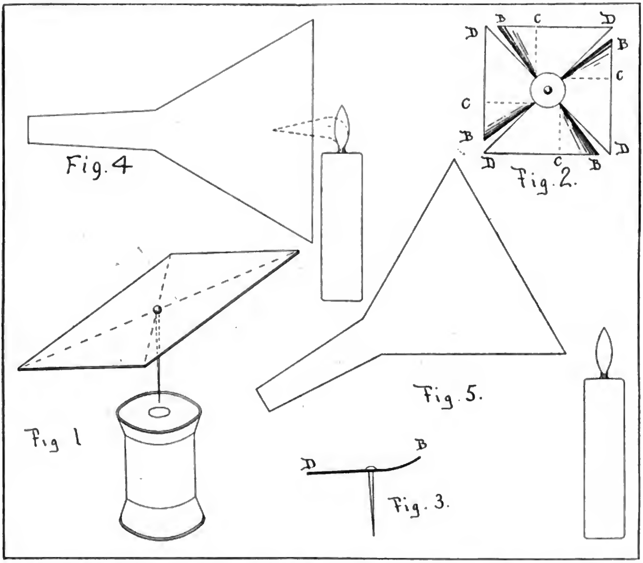
By C. W. Howell, Jr.
Director, The Aeronautical Society

AIR currents and the effect of moving bodies in the air have been a source of baffling mystery to even some of the most scientific minds, and how true this is may be determined by a few interesting experiments, easily made by anyone without expense.

Most everyone has seen the so-called ball nozzle in which a stream of water moving with considerable force is caused to form a hollow cone by means of a loosely mounted or free ball directly in the path of the water. No matter what force the stream of water has it cannot dislodge the ball. This is purely an air current phenomenon and may be considered a physical paradox.



The miniature whirlwinds one often sees in the street and roads are true air cones because they develop force enough at their apex sufficient to pick up dust, small sticks, etc., while at their frustrum for a considerable space about their axes there is little or no force except that caused by atmospheric pressure supplying the losses caused by friction of the inner wall of the air cones.

If we take an ordinary lightweight visiting card and stick a pin through the exact center of it (which may be determined by drawing lines diagonally from each corner) as shown in Fig. 1 and then place the pointed end of the pin into the hole of a thread spool, allowing the card to rest upon the head of the spool, and then blow through the other end, it will be found impossible to blow the card away from the spool, in fact, the harder one blows the more impossible it is to dislodge the card. Even though one blows and then points the whole apparatus toward the ground, allowing gravity to assist, the card cannot be dislodged.

If now we take a card about 2¼ in. square (Fig. 2) and find the center by means of the diagonal lines and then strike a circle about the center, having a diameter twice that of the hole in the spool and then cut along the diagonal lines from the circle to the corners and then bend the four corners BBBB upward at the dotted lines CCCC a pin-wheel or air vane will be formed which, when inserted in the spool in the same manner as the previous card experiment, will rotate with great rapidity as long as one blows through the hole in the spool. Care must be taken to only bend the corners BBBB upward and the pin must be inserted as shown in Fig. 3. If the corners DDDD are bent downwardly or if the pin is inserted any other way the experiment fails owing to there being an air space between the card and the spool.

Another interesting but not so easily performed experiment is to place a lightweight visiting card lengthwise on the under side of one's fingers when extended and held closely together, holding it against the fingers lightly with the other hand. Now blow on the *back* of the fingers between the second and third and midway between the joint and knuckle—the other hand may then be removed and the card will adhere to the fingers as long as you blow. It takes a little practice to accomplish this, but it is worth the trouble.

The most interesting of all is the experiment performed with a funnel and candle. If a lighted candle is held so that the flame is positioned at about the center of the large end of the funnel as shown in Fig. 4, not only is it impossible to put the flame out when one blows through the small end of the funnel, but the flame will be *drawn into the funnel* toward the mouth, and no heat effect will be felt at all.

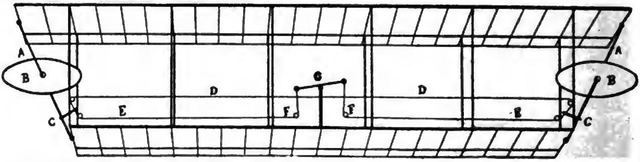
Now hold the candle and flame in the relative position shown in Fig. 5 and the flame can be readily extinguished by blowing through the small end of the funnel.

To my mind this experiment clearly illustrates the theory of vortex rings or more truly vortex *currents* or better yet *cone* currents, and I firmly believe that exploration in this field will bring forth new ideas and new principles will be discovered that will lead to the perfection of air devices in general and the propeller in particular, because I do not think that the real effect of moving structures in or through the air is understood in spite of the fact that flying machines are no longer a novelty, and I hope that a general discussion will arise through the presentation of the experiments outlined here.

A New Control

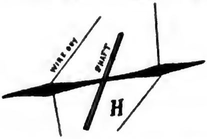
THE method of aeroplane control illustrated has been designed by James S. Stephens, 7321 Bond Ave., Chicago.

The upper plane or deck of a biplane is made to project at each end beyond the lower. This in itself is claimed to add to the stability of the machine "by presenting a more efficient lifting surface to the air on the side tending to dip, and at the same time compensating for the deficient lifting power of the upper plane due to the resistance and disturbance of the air currents by the lower plane."



An inclined shaft A is journaled in ball bearings on the ends of each plane; midway between the planes on this shaft a circular plane B is attached and supported in a normally horizontal position by suitable wire guys. An arm, C, projecting at a right angle from the lower end of each shaft, has a flexible wire connection, D, from one to the other on one side, while the connection on the other side, E, passes up through pulleys, F, to a rocking arm, G. Any movements of the ends of this arm up or down will rotate the shafts, A, tilting one of the circular planes and the other down, giving a lifting effect on one side and depression on the other, the rocking of the arm G being a natural movement in opposition to the tilt of the machine.

In the adjustment of angles of these inclined shafts, they may be made to incline rearward or forward to such an extent as to present dihedral angles to the main planes when turned on their axes, thus giving a more positive lifting effect opposed to end tilting downwardly.



These planes are of circular form and in section as shown at H this form and section presenting a sharp edge to the air as it meets and leaves the surface and at the same time providing a concave surface on either side, thus greatly adding to their efficiency.

Can a Man Fly With Wings?

By H. La V. Twining

[Continued from the July Number]

Some experiments performed by myself in 1895 have a bearing upon this. If a silk cloth be hung up and a turkey wing be spread open, it can be vibrated in various positions in front of the cloth, and the action of the wing on the air can be easily demonstrated.

If this be done the following results are obtained: When the front edge of the extended wing is presented to the cloth, and the wing is vibrated in imitation of the flapping wing, the cloth is sucked in all along the front of the wing. This shows that the air is moving bodily from the front toward the wing. If the rear edge of the wing be presented, the air is sucked in along the rear edge. If the top of the wing be presented, and be vibrated to and fro toward it and away from it, the cloth is again sucked toward the wing. In fact, it clings to the wing as though it were glued there. If the bottom of the wing be presented the same thing takes place. This shows that when the wing is struck toward the cloth, the cloth is not driven away, but, on the contrary, it rushes to meet it.

If now the rear tip of the wing be presented, the cloth will be blown violently to the rear, downward and rearward. This simple experiment reveals at once how the wing is acting on the air.

As the wing beats, the air rushes in toward it from all directions except one, and here it is blown violently away. From this we are entitled to draw certain conclusions. The wing in beating creates an area of low pressure, and the air rushes in from all points toward this area, except the point where it is blown away. Now the more air the wing displaces the stronger the air rushes in.

When we remember that the air produces a pressure of 15 lbs. to the square inch, we can see the enormous possibilities here. Pressure on the wing is produced then in proportion to the displacement of the air. If the air were all displaced, then the incoming air would press against the wing with a force of 15 times 144 or 2,160 lbs. per sq. ft. This pressure, of course, can not be realized in practice, but the possibility for enormous reactions lie here. The pressure of the incoming air is all utilized in giving lift on the under side of the wing. When the wing strikes down it meets air coming toward it. When it strikes up, the upper surface meets the same condition. Here is the rock upon which all ornithopters built up to the present time have split. The up stroke throws them to the ground with as much force as the down stroke throws them up.

Evidently this is not the case with the flying birds, because they fly, and if their up stroke threw them down, this could not happen.

What then is the peculiar structure of the bird machine that prevents this? Much speculation has been indulged in as to the feathers opening on the up stroke to let the air through.

Just a little intelligent observation of an extended wing will show how utterly fallacious this assumption is. The feathers overlap so that they shingle on top from the part near the body to the tip. On the under side they shingle the other way. In either case, as the air strikes the surface, the feathers bind together and present a solid surface to the air. The direction in which they shingle cannot make any difference in this respect. If we take up the wing and blow violently on top of it, holding the hand on the other side, no air will be felt coming through. If we blow against the under side the same result is obtained. Some have argued that the bird turns the feathers edgewise by means of muscles in the wing, but I have dissected many wings, and have looked in vain for any such muscles. If we get hold of the tendons of the muscles and pull them, we can see what they will do. There are no muscles singly or in sets that perform any such function that I can discover.

Furthermore, if one observes large birds, such as the pelicans, turkey buzzards, sea gulls, etc., as they go overhead, one would be able to see the blue sky through them if they turned on edge.

In soaring, the turkey buzzard spreads out its feathers at the tip of the wing more or less like the spreading out of the fingers, but this is a disadvantage rather than an advantage as it lets air through from below.

Then again, birds in flying throw the wing open strongly on striking down with it, and fold the outer joint considerably upon the up stroke. This accomplishes just the opposite result from what those who advance the above theory are looking for. It closes the feathers together in a tighter mass than on the down stroke. It, of course, presents less surface to the air on the up stroke, but it serves a very important purpose as we shall soon see.

The reason why the up stroke of the wing does not throw the bird down lies in the peculiar structure of the machine as a whole.

The fact that the front edge of the wing is attached to the shoulder, forward and above the center of gravity is a fundamental principle in bird flight. Under these conditions the up stroke develops a pressure on the upper surface of the wing, which rotates the whole machine around the front edge of the wing as an axis or fulcrum, and thrusts the bird forward, in the plane of the wing. If the wing is pitched upward, then the resultant motion is forward and upward. If the wing is pitched downward, then it will be thrust forward and downward. Whether the wing be pitched upward or downward depends on the will of the bird. By raising its abdomen or lowering it, it can go up or down as it chooses. When it wishes to fly down, it contracts a set of muscles that raises the abdomen relative to the plane of the wings. This raising of the center of gravity also brings it farther to the front, and as a consequence, the bird pitches forward. If it desires to go upward, it lowers the rear of the body, thus depressing the center of gravity and drawing it backward. This displacement of the center of gravity with reference to the center of pressure controls the fore and aft stability of the bird. The fact that this center of gravity is below and to the rear of the front edge of the wing is of vital importance in the maintaining of fore and aft stability. The tail is also used in maintaining fore and aft stability.

The center of gravity acting downward vertically is pitted against the center of pressure on the wings acting upward. The center of gravity acts over a lever arm with the front edge of the wing as a fulcrum, the feathers being the lever arm over which the center of pressure acts. These two lever arms are practically equal, and the weight and center of pressure take no mechanical advantage of each other.

Because of this the body of the bird rotates downward when the wing is struck up, and upward when the wing is struck down, thus alternately rotating upward and downward, around the front edge of the wing, wedging itself through the air, always moving along the line of least resistance, which is in the plane of the wing, forward. This can be easily seen in large birds like the pelican and the sea gull. As the pelican rises from the water, if one says up, up, etc., as the wing goes up, at the same time watching the abdomen, one can see plainly that the abdomen goes down. If on the other hand one says down, down, etc., as the wing beats down, one can easily see that the abdomen rises. Furthermore, by watching the head, one can see that it goes down while the abdomen goes up and vice versa.

This can be seen in the pigeon as it is about to alight. When the sea gull is coming directly toward one, the motion of the head, as it bobs up and down, can be easily seen. E. J. Marey demonstrated the same thing with his tambours, but he misinterpreted the curves which he obtained. He interpreted his curve to mean that the bird was driven backward on the up stroke. Such a result would be impossible. A careful perusal of his book, and an inspection of his curve will show that instead of being driven backward, what happened was this: the abdomen was rotated downward, on the up stroke, thus giving the tambour between the shoulders of the bird a backward movement. This registered a backward movement but it was not a backward movement of the bird, but a backward movement of the tambour, which was located above and on a line with the front edge of the wing.

The inertia of the weight caused it to press on the drum of the tambour, thus recording a curve on the kymograph, which he interpreted erroneously.

The up stroke of the wing thus becomes exceedingly effective, and it results largely in driving the bird forward, while the down stroke develops the lift principally. We can now account for the weakness of the elevator muscle. When the up stroke is made the bird rotates downward, presenting the under surface of the wing at a greater angle of incidence. The inrushing air striking the under side of the wing reacts upon it and the big pectoral muscle has to take up the strain.

Thus the elevator merely thrusts the mass of the bird forward, while the pectoral muscle has to assume the bulk of the work that results from that thrust. The folding of the wing on the up stroke also helps to produce this rotation by giving the feathers at the tip greater leverage.

Inertia plays a most important part, not only in the flight of birds but also in the flight of aeroplanes of all kinds. When a stone is thrown through the air, it does not rest on the air, it pursues a path which is the resultant of two forces acting on it. One of these is gravity pulling it downward, and the other is the momentum of the stone itself, which tends to keep it in a straight line. The resultant curve is a parabola. The same thing happens to any projectile whether it be an aeroplane, a bird or a stone. So by virtue of its motion, the bird only needs to strike the air often enough to keep up its motion or to lift it back through the distance fallen through in the interval of time between strokes.

Furthermore, inertia, whatever its nature, acts like a resistance. If a body be moving in a straight line it resists any tendency that tries to deflect it from a straight line. It takes an appreciable amount of time to overcome that resistance. Hence, if the moving mass be constantly kept in a straight line by reactions against the air, its inertia prevents it from developing the result of the pull of gravity, and hence it had practically lost its weight. Consequently the reactions necessary in keeping it in a straight line are those necessary to handle its mass only and not its weight.

Finally a man-carrying machine can be built weighing not more than 80 lbs., which with the weight of the aviator, 140 lbs., makes in all 220 lbs. The question is, has man power enough to get 220 lbs. into the air and maintain it there? At first sight the answer to this question seems obvious enough, and the answer is, no.

But if we consider that a soldier can put 75 or 80 lbs. on his back and march all day with it, we see that a man has power enough to handle his weight and the weight of a machine as well.

Again a man weighing 200 to 220 lbs. can handle his weight, although possessing no more power that a lighter and more sinewy man. In order to accomplish this a man must bring his whole muscular system into play, in operating the wings; and this must be done also to the best mechanical advantage possible.

This has been done in the ornithopter mentioned above. Hand and foot levers have a mechanical advantage of 4 to 1 in their attachment to the front edge of the wing. The operator stands on the foot levers and grasps the hand levers. These two sets of levers attach to the front edge of the wing on opposing sides of the main bearing of the wing upon the frame, so that the weight of the operator is thus thrown alternately upon the levers in the up and down stroke, the weight being in fact constantly supported by the opposing pulls of the hands and feet, around the bearing of the wing upon the frame. The weight to be lifted is 220 lbs. This is then to be lifted by striking the air with the wings in an up and down stroke, so that only a 110-lb. reaction needs to be developed under each wing in order to lift the machine as a dead lift. The application of a 30-lb. pull between the hands and feet brings a 120-lb. pull to bear on the wing in order to depress it. This is 10 lbs. more than necessary in order to balance a 110-lb. reaction under the wing necessary to lift the machine. Under these circumstances experience has shown that the wing can be driven fast enough to develop this reaction. In fact the wings on the above machine will not have to make more than 60 half beats per minute in order to develop this reaction. With the wings made a trifle larger, the speed can be very materially reduced. Experiment has already demonstrated that the pressures can be manually developed and that with a 30-lb. pull on each side or 60 lbs. in all.

It must be recognized that this pull is the maximum pull necessary to get the machine off the ground. After getting on the wing no such pull will have to be maintained. The only remaining thing to be determined is as to whether the wing is a very efficient transformer of motion or a very inefficient one. If it be very inefficient then man cannot hope to fly by manual power, but if it be a very efficient one then in my judgment men will fly by the exercise of their muscles as a bird does.

The wing when operated displaces the air as before shown, and in so doing creates air currents toward it, and these air currents produce a pressure upon the wing in proportion to the mass of the air displaced, hence there is practically no slip; because the greater the stream of air driven to the rear, the greater the pressure returned to the wing by the incoming air. On this account all the energy expended on the air comes back again in the shape of pressures which drive the machine forward and give it lift. There are frictional losses of course.

In this paper some of the principles only are considered. There are others that we can hope to attack with some intelligence only upon the completion of experiments now in progress. Experiments only can furnish the data upon which to base the calculations.

The ornithopter above described is fully protected by pending patents.

(*Concluded*)

The World's Record Altitude Flight

By W. R. Brookins

IN preparing for the high flights at Atlantic City I had put on a sweater and heavy gloves and was sweating to beat the band when I started. After passing the three thousand foot mark I began to get much cooler. Over the land it would be a little bit warmer than over the sea. And at six thousand feet I actually shivered. Beginning at three thousand feet I had to frequently yawn to reduce the air pressure from within on the ear drums. Over the ocean I could see absolutely nothing below me but mist, although on the ground the atmosphere seemed perfectly clear. The sky above was perfectly clear and the sun was just setting, but I had to circle over the land to get my bearings. Down on earth the sun had already set. I had to follow the "feel" of the machine to determine whether I was climbing. At that height one cannot tell whether he is steering down or up except by the "feel."

I had to fly over a certain spot, a boat anchored out in the sea beyond one of the piers. In order that the engineers might follow me for their measurements. Just as I was crossing the line of the beach, coming in shore, I heard the engine miss twice and I immediately turned for the stake boat, in order to let the engineers catch me, and leveled the machine so as to allow some of the gasoline to run forward and down the pipe to the engine. This kept me going beyond the boat when the engine went dead and I turned and circled down. From a thousand feet high I had to figure how to reach the landing between the piers on the beach.

Humidity and Flight

By Dr. A. F. Zahm

"Humidity has a great deal to do with the success of a flight. If the percentage of moisture in the atmosphere is low, it is much more difficult to fly. The engine gives less power, the propeller gives less thrust and the surfaces have less lifting effect."—Statement credited to Glenn H. Curtiss.

IF IT be admitted that the engine gives less power, it naturally follows that the propeller gives less thrust, and the surfaces have less lift than they would have with larger power. But it would be wrong to assume that the propeller gives materially less thrust at the same speed in dry air than it does in moist, or that the lifting surfaces, at the same speed and inclination, give less support in dry air than in moist. On the contrary, at a given pressure and temperature the density of dry air is slightly greater than the density of moist air; it may be as much as 1 per cent greater. Now, for a given speed and angle of impact, the thrust or support varies directly with the density. Hence, at most it could vary but 1 per cent due to moisture, all other conditions being the same.

Reference should also be made to "Flying and Humidity," by Charles F. Willard, in the June, 1910, number.

Center—Brookins (left) and Hoxsie
Bottom—Orville and Wilbur Wright

Flying Meets in

Height Records Broken

Indianapolis, June 12-18.

BY R. E. SCOTT.

The Exhibition Department of the Wright Brothers Company made its initial bow to the general public at the Indianapolis Motor Speedway during the week of June 13-18. Several important points were demonstrated at this meet; points of interest to promoters as well as to aviators.

So far as the flying itself was concerned, the meet proved pretty conclusively that the Wright aeroplane is a very steady and dependable machine. There were about sixty flights during the six days of the exhibition, and there was no suggestion of an accident.

In the tranquility of the performances—the invariably successful starts, and quiet, uneventful landings—lay the chief beauty, from the writer's standpoint of the meet.

But in just that same tranquility lay its chief drawback from the standpoint of the box-office. Peace and quiet are all very well in their way, but after a man has loafed around a railroad station thirty-eight minutes waiting for transportation to the field, has quietly sat on a plank upholstered bleacher divan at a temperature of 120 Fahr. for three hours waiting for something to happen, and with equal peace of mind finally watched—at a distance of half a mile or more—these great white birds rise gently into the air and sail placidly around the track until fancy moved them to descend, that man is apt to lean toward something more stirring than the prospect of quietly walking two or three miles along a country road to where he can find a suburban trolley to take him back to town.

Walter Brookins furnished the incidents of most spectacular interest during the week. The first day, after several races against himself around an unmeasured course, Brookins made an attempt at an altitude record. His altitude was taken by A. B. Lambert, of St. Louis, with a combination of yard-stick and two pin-points an inch apart. Attached to the aeroplane was also an instrument for recording altitude. This was hung between the planes on a strap, but is said to have been put out of commission by striking guy wires as it swung about.

NEW WORLD RECORD.

Brookins climbed for twenty-four minutes, at which time Mr. Lambert announced the altitude of the machine as 4,384 ft., as against Paulhan's Los Angeles record of 4,165 ft. The descent lasted about six minutes.

Brookins, in an earlier attempt, had ascended 2,093 ft. It was the greatest altitude attained by a novice and the greatest ever made in an American-constructed aeroplane.

Brookin's flights were a revelation. He cut sharp circles, mounted quickly as a bird, shot to the ground, swooped and dived, bringing out enthusiastic applause.

Twice during the day Orville Wright flew, on one occasion taking up Carl G. Fisher, of the Prest O Lite Co.

UP 2,083 FEET.

The altitude record was again assaulted on Tuesday, June 14. Brookins climbed for 12 minutes. The engineers who took the altitude by triangulation, figured his altitude at 2,083 ft., and these figures were corroborated by the recording instrument which on this occasion was properly fastened. The descent lasted six minutes.

Many States

Sensational Flying

A feature of the second day was a "contest" between a Wright aeroplane and an Overland 40 h. p. automobile rigged as a "wind wagon." A stock car was stripped and driven by a wooden propeller 8 ft. long, at 750 r. p. m. Official figures are lacking but the Overland company states that 5 miles were made in 5:20 (53 miles an hour), while a figure gleaned from another source gives the time at 4:58 for 2¼ miles. The car weighed 1,800 pounds. The drive shaft was not connected with the differential. The propeller was driven by a chain from a driving sprocket having 17 teeth attached to the shaft, the chain running over an overhead shaft with a sprocket of 31 teeth.

Johnstone made his longest flight, 55 minutes, on this day, going up to 920 ft. altitude.

Orville Wright flew again on the 15th making beautiful manoeuvres in the dusk, after the program had been delayed by rain.

BROOKINS' MARVELLOUS TURN.

Perhaps the most sensational event of a thrilling week was Brookins' quick turn on June 16. He made a complete circle in 6 2/5 seconds, and his main planes assumed so nearly a vertical position that many thought he was falling. Only one of the many photographers on the field had enough presence of mind to snap a camera at him. This one picture was caught when the machine had begun to take its normal position, but the angle with the ground is still a very sharp one. This is reproduced in this issue.

3,876 FEET HIGH.

Arch Hoxsie's motor stopped while Ralph Johnstone was making a 44-minute flight and he had to land outside the Speedway. Then Brookins went up for another altitude flight and after climbing 45 minutes, reached an altitude of 3,876 ft., officially measured by city surveyors. The flight lasting 54 minutes 20 seconds. The barometer carried on the machine registered but 3,700 ft.

ANOTHER NEW RECORD.

Again on Friday, June 17, Brookins made another try for the record. He carried two instruments—a barometer within plain sight and the recording instrument—and his altitude also was taken by reputable engineers. Brookins climbed steadily for 55 minutes, and his barometer showed him to be about a mile high. The engineers had no opportunity to catch him at his greatest height because he was then so far from the earth that he could not exactly locate the Speedway and consequently sailed, still climbing, twice across the course out of range. The duration of the flight was 1:04:00.

As if the climb in itself were not sufficiently sensational, Brookins' motor stopped at an estimated height of 3,000 ft. He then was perhaps four miles from the center of the Speedway, and the spectators, not realizing that the engine was no longer running, wondered why he was making the long descent in almost a straight line. The aeroplane just made one long streak for the earth, and landed beyond a clump of trees at some distance from the track. There was a rush of excited newspaper correspondents and spectators towards the automobiles, but it was stopped when some one with a field glass announced that the landing was safely accomplished. The altitude was officially measured as 4,939 ft., a new world's record. During this flight Johnstone and Hoxsie each were flying.

Brookins Turns Complete Circle in 6 2-5 seconds

Numerous good flights were made during the week by Hoxsey, Johnstone, La Chappelle and Coffyn, but they were uneventful because of the lack of competitive features. A number of races were scheduled but none were actually attempted. Ten flights with passengers were made.

To Captain G. L. Bumbaugh belongs the credit of making the first flight on the Indianapolis Speedway. On Friday, preceeding the opening of the big meet, and while the Wright forces were engaged in assembling their machines, the engine for Captain G. L. Bumbaugh's machine was delivered on the grounds. Carl A. G. Fisher, owner of the machine, offered to wager Roy Knabenshue, of the Wright Co., that Captain Bumbaugh would be in the air before any of the other 'planes were ready. The wager was accepted and both sides hustled to get their machines in readiness. Captain Bumbaugh's engine, an Elbridge "Featherweight" 40-60 h. p., was hastily installed and the aeroplane brought out of the tent. At the first attempt Captain Bumbaugh's machine rose from the ground, after a run of about 100 yards. But the Captain underestimated his power reserve and the machine shot into the air about 30 ft. before he thought to reverse the elevating plane. When this was done his descent was as rapid as his rise had been. Skimming the ground Captain Bumbaugh again rose and on this attempt flew for about half a mile before the tricky elevator plane again brought him to the earth.

Such repairs as were made necessary by this rapid descent were completed by Monday, the first day of the meet, and early in the evening Captain Bumbaugh prepared for another try. This time he was over cautious in the other direction. Realizing that the powerful engine might drive him into the air faster than he cared to go, he deflected the elevator planes befor the start. The machine got away with a rush. A slight obstruction was encountered, just enough to jolt the machine clear of the ground; with the deflected plane in front and the thrust of 50 h. p. behind, the aeroplane keeled over onto its head, burying the aviator in the ruins. The engine continued running, the propellor threshing the guy wires, until Captain Bumbaugh recovered sufficient presence of mind to kick loose his ground wire. To the immense relief of the spectators Captain Bumbaugh a minute later rose to his feet and waved a reassuring hand. The damages to aviator and machine looked serious but fortunately were of such nature as to be easily repaired.

Several short flights were attempted during the weeks by J. W. Curzon, but his big Vivinus motor did not deliver power enough to offset its own weight and carry the machine into the air. Mr. Curzon announced his intention of replacing it with an Elbridge "Featherweight."

Lincoln Beachey had his monoplane, and there was the Marquette and the Shaw biplanes but none of these flew.

RESULTS.

The accumulated duration of the flights made during the Indianapolis meet total as follows:

W. R. Brookins	7 hr. 59 min.
Ralph Johnstone	1 hr. 51 min
A. L. Welch	1 hr. 25 min.
Arch Hoxsey	1 hr. 9½ min.
F. T. Coffyn	20 min.
D. La Chappelle	1½ min.
Longest duration single flight:	
W. R. Brookins	1 hr. 4 min.
High altitude flights:	
W. R. Brookins, June 13 (world's record)	4,384 ft.
W. R. Brookins, June 13	2,093 ft.
W. R. Brookins, June 14	2,083 ft.
W. R. Brookins, June 16	3,876 ft.
W. R. Brookins, June 17 (world's record)	4,939 ft.
Ralph Johnstone, June 14	920 ft.
Flights of which official record was taken	55

Atlantic City, N. J., July 4.

BY R. F. PATTERSON.

The series of exhibition flights organized by the Atlantic City Aero Club, composed of the hotel and business men of the town, costing $25,000, was a great success. A section of the beach was set apart for the use of the aeroplanes, and everything was free to the public. The flights were sanctioned by the National Council, represented by Augustus Post and Henry M. Neely.

On July 4 Curtiss made his first flight on the beach between two piers in a stiff breeze. The enormous crowd made flying dangerous.

The next day Curtiss made three flights, the longest being 8 minutes. This was made over the long piers, up and down the beach at a height of about 200 ft. and out over the sea.

On the 6th it was necessary to run close to the water to get hard sand. The tip of the propeller was caught by the incoming waves and broken at the ends. With another propeller a flight of 15 minutes was made, circling over the piers and the boats anchored near the shore. Then a short flight.

No flights on the 7th.

On July 8 Curtiss made a 10½-minute flight at a height of 500 ft. Then Brookins got off with a 400-ft. flight, cutting various capers and making a sharp circle similar to the one at Indianapolis. This flight lasted about 9½ minutes. While he was in the air Curtiss started again and flew above him, for 5½ minutes. Starting again, inside of 6 minutes Curtiss was lost to view, having gone down to Hugh L. Willoughby's grounds, some four miles away. Landing there he waited for his men to come and start him back. Rumors of all kinds circulated, as he was gone 1 hour 16 minutes.

BROOKINS MAKES SHARP SPIRAL.

A few minutes after Curtiss got away, Brookins started and went to a height of 1,800 ft., making beautiful curves and evolutions all the way up. He was up some 15 minutes, coming down in a spiral to a height of about 300 ft., the diameter of the spirals being not more than 200 yards. This was very spectacular. After waiting a half hour for Curtiss, Brookins started off again on a 6-minute "every day flight." Curtiss caused great excitement, as all thought he or his machine was damaged. There was cheering when someone said "Here he comes," and a speck could be seen about 4 miles away, 500 ft. up.

On July 9 Curtiss took the air first and Brookins followed in a preliminary flight, Brookins going to about 800 ft. back and forth across the piers. These flights lasted 9 and 3 minutes, respectively. A half hour later Curtiss started on a 5½-minute flight for a moving picture man. Again Curtiss started, before Brookins was ready for his altitude flight, but flew only from one pier to the other. On Sunday Curtiss made one flight of 4½ minutes.

BROOKINS MAKES ANOTHER WORLD RECORD.

Shortly after this landing Brookins started on his wonderful altitude flight. In 53 minutes he had reached a height of 6,175 ft., the highest yet attained by aeroplane. The previous official altitude flight is also held by Brookins, being 4,939 ft. The latest foreign record, 4,615 ft., was made recently by Latham in France. This day's flight exceeds all attempts by 1,236 ft. His descent, without power, for lack of gasoline, took 10 minutes, having been in the air 1 hour 3 minutes. After landing he joyfully rushed to telephone through cheering crowds to 'phone the news of his success. This record won for him the $5,000 offered as a height prize.

While he was making this flight, Curtiss started again and made short flights of two or three miles, circling between the piers several times before landing for the last time during this day of exhibition work.

On Sunday, July 10, Curtiss gave an exhibition of a flight in a wind estimated by himself and others to be 20 miles. But for the enormous crowd, estimated at 100,000, along the board walk, piers and housetops, Curtiss would not have attempted the flight owing to strong wind and high sea rolling. He received great cheering for his 5-minute flight, circling between piers and over the

Google

ocean. Curtiss reached a height of about 300 ft. during flight. The Wrights will not fly, or allow their own machines to be flown on Sunday, so Brookins did not fly this day.

CURTISS FLIES 50 MILES.

July 11. Curtiss started flying for the $5,000 50-mile prize at 3:24 o'clock. After finishing 50 miles, or ten 5-mile laps around piers, he circled Atlantic City. Entire flight lasted 1 hour 21 minutes. The average height was 700 ft. During the flight quite a southwesterly breeze was blowing, making a record speed flight impossible. The actual time for the 50 miles was 1:15:00. The fastest lap was 6:01 4-5, a speed of 49.88 miles per hour. The time made was not as good as previous records held by Curtiss machines. This won for him $5,000, as the Wright machine did not try for it.

Brookins made the next flight and for 15 minutes gave a fine exhibition of the control he has of the Wright machine, twisting and turning at almost impossible angles.

Curtiss then flew from the Million Dollar Pier to Old Pier to get ready for his record-climbing flight. Before this was started, Brookins attempted flying with Mr. Coffyn, another Wright pupil, as passenger. At 6 o'clock the machine ran down the monorail, but failed to rise. It was pushed back to starting point and another trial took the machine up to an altitude of 300 ft. at times. A very fine flight was made for 15 minutes with short turns and dips. After the descent, Curtiss made the most notable flight of the day—the quickest time for reaching 1,000 ft. He actually reached between 1,500 and 1,600 ft. in the remarkable time of 5 minutes 52 seconds, traveling in a straight line for about two miles, turning then and descending to earth. Shortly after landing he flew back to the Million Dollar Pier, carrying Lincoln Beachey as passenger. While hauling the Curtiss machine up the platform to house it, F. Coffyn made a short exhibition flight in the Wright machine used by Mr. Brookins. This lasted 5 minutes, reaching about 150 ft. at times. This ended the last intended day of the aviation meet at Atlantic City—but the aviators had been persuaded to remain over another day.

BROOKINS' MACHINE STANDS ON END.

July 12. At 3:30 P. M., Brookins started for a flight and rose to a height of from 900 to 1,000 ft. and remained in the air some 20 minutes doing almost the impossible at times in his turns. At one turn his machine stood close to an angle of 87 degrees, and it appeared that he had turned too far by mistake. All held their breath and "Ohs" were heard all through the crowd.

An hour later Curtiss went up to bombard a life-boat with oranges from a height of 400 ft. Out of six oranges three would have hit a battleship, the last bomb landing within 12 ft. of the boat. He circled around between piers till his orange bombs were exhausted, then landed. Five minutes later he was in the air again flying down to Old Pier to interview Mr. Shackleford. After a half hour's wait the crowd saw him in the air again firing bombs at the reporters and photographers. This caused great laughter among the audience to see them dodge from being struck by a flying orange which was merely a juicy spot after striking the ground or water. This flight ended his last exhibition at the Atlantic City meet. The machine was housed and "knocking-down" began.

Brookins, however, made one more flight, doing his usual quick turns, and fooled all by coming down to earth as if to land and then shooting out to sea again, as if he had forgotten something, which eventually proved to be true, for he shot up to 300 ft. and then came down close to water, 25 ft. from shore, bringing the machine so low that the skids seemed to rest on two waves and followed them to shore. Eventually he actually struck the water near shore, rising again and then landing at his camp.

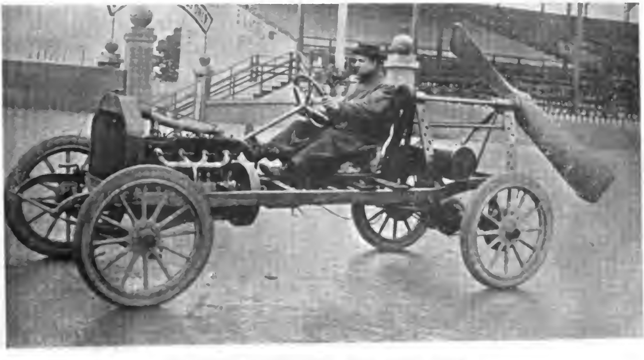
It is a strange fact, but during the entire week there was not a single accident of any kind, except the first day, when Curtiss landed in deep sand and ran into a hole, breaking one post. Outside of that not a wire, nut or any part of the machines had to be altered from the first day of "setting up."

The weather proved ideal, except one day, and the crowds were enormous. The largest day Atlantic City ever had was July 4, when, it is claimed, 300,000 attended. The entire meet was a success in every way, thanks to the management and the whole-hearted way in which it was carried out—free to all.

Montreal, June 28-July 5.

BY H. K. HITCHCOCK.

The "meet" was from one viewpoint, the scientific, eminently successful, and as a direct result an impetus to the interest in and study of aeronautics has been started in this great country. Financially the meet was a failure, the expenses running to some $40,000, but the flying was good—continuous every day of the meeting, all done by the Wright and Bleriot machines. J. A. D. McCurdy only got up once in the early morning and quite wrecked their Baddeck II in landing with the wind. McCurdy was unfortunate



The Overland "Wind Wagon" at Indianapolis the whole week. He had trouble getting his machine on the grounds to begin with, and assembling was delayed by reason of no shelter. G. G. Hubbard, of Boston, was induced to come at a late date with his monoplane, built by the Canadian Aerodrome Co. of Baddeck, without an engine, which had to be sent for to Baddeck and it did not arrive until the last of the week.

The Wright team, Brookins, La Chappelle, Johnstone and Coffyn, all flew well. Count de Lesseps was a striking feature with his two Bleriots, a 50 h. p. Gnome engined type XII and the smaller XI with the Anzani 30 h. p. motor. His 30-mile trip to and over the city of Montreal in 49 minutes was the great event of the exhibition. He used the big "Scarabee" with air bags, the same equipment he used in his cross-Channel flight. Fred Owen and Cromwell Dixon, with their dirigible attracted small attention. Dixon tried a new propeller on the advice of Knabenshue and increased its speed. The airship escaped and burst, on the fourth day of the meet. This made quite a stir, as the people could not tell whether he was in it or not. He stopped the motor by accident, descended, jumped too soon and missed the guide rope. Johnny Mack and one of Ed. Hutchinson's men made daily parachute drops from hot-air balloons.

Wm. Carruthers, vice-president of the International Aviation Association, which promoted the meet, bought a Bleriot XI and imported one Miltjen from France to fly it. Miltjen's experience at flying was evidently obtained at a correspondence school. On his first and only flight the machine jumped into the air and then gracefully dug its nose in the dirt. Cromwell Dixon, who had never been in an aeroplane before, then tried it and made a highly sensational and wild flight, narrowly escaping accident, but brought it safely down.

SOME OF THE FLIGHTS.

The feature of the first day was Brookins' 2,000-ft. altitude flight, while de Lesseps and Johnstone were the other aviators. On the second day de Lesseps in a trial for speed lost to La Chappelle, while Brookins made another altitude flight of 1,650 ft. On the 28th Johnstone was up 45 minutes, and Brookins flew to a height of 1,360 ft., and was up 20 minutes. The start on the rail was timed, too, at 5½ seconds till the machine was in the air. On June 29 Ralph Johnstone flew for 40 minutes and Brookins was up 21 minutes, flying to a height of 2,450 ft. This was after carrying up de Lesseps for a 13-minute trip. Early in the morning McCurdy made a flight in the "Baddeck II," but, landing outside the grounds in the tall grass, the machine was partially wrecked. R. Timberlake, who had bought a Bleriot XI, essayed his first flight. With a novice's inexperience, after getting off the ground, could not stop in time to save hitting the grandstand. The next day Johnstone flew for 25 minutes and Brookins took up Count de Lesseps' brother to a height of 1,140 ft. in a flight of 25½ minutes. Then he made a trip alone up 2,000 ft.

3,130 FEET IN AIR.

On July 1 Brookins again made a high and sensational ascent, reaching 3,130 ft. in a flight covering 45 minutes.

DE LESSEPS FLIES OVER CITY.

The most sensational flight of the meeting was de Lesseps' journey over three bodies of water and Mt. Royal in a continuous flight around Montreal's City Hall and back to the aviation grounds, a round trip of 30 miles. The flight lasted 49 minutes. His face was screened from the oil of the Gnome engine by a thin wire gauze mask.

BROOKINS SETS CANADIAN RECORD.

On the same day Brookins ascended to 3,510 ft.

The meet closed on July 5, with small attendance and few flights. Some of the Wright machines were going to Toronto, but two had to be rushed away, so these were flown from the aviation grounds to the railroad station, over the hills and trees. The landing spot had not been investigated and when Brookins and passenger flew over they saw they had but a very small place to land. Steering sharply down into tall grass, the latter caught in the wires and corners, turning the machine face down and breaking the front construction. The second machine they flew over made a safe landing.

Nashville, Tenn., June 21-26.

Unquestionably among the most spectacular flights that have been made may be numbered the two night flights of Charles K. Hamilton during his exhibitions at the Military Tournament at Camp Dickinson.

FLIES WITH SEARCHLIGHT.

The first flight was in the dark of the early evening, with the moon obscured by clouds. Hamilton flew over the electric light studded grounds, almost touching the string of bulbs, then shooting up into the air and gliding down. Someone suggested a searchlight and immediately there was hustling to attach a Prest-O-Lite tank under the seat and the headlight on the front framework. About 11 o'clock in the night he was ready and the sight of the big automobile lamp flashing up and down through the semi-darkness, the moon having decided to show her face, was a thrilling one. After flying about a quarter hour a cylinder head blew out and he was forced to land.

Louisville, June 18th and 19th.

On June 18, Curtiss lowered his own record of quick starting to four seconds flat, with the Albany-New York 8-cylinder biplane, starting on very rough and grassy ground. Hamilton did it in 3 4-5 seconds at San Antonio last April.

On account of a very choppy and high wind, neither Mr. Curtiss nor "Bud" Mars was able to make any very nice flights until after 5 o'clock, when above a crowd of nearly 10,000 people. Mr. Curtiss carried a local newspaper man for a short flight.

A stiff wind until late the next afternoon prevented any circular flights. However, after 5 o'clock Mars, at an altitude of 20 to 40 ft., raced against Curtiss around the circular track 10 times, Curtiss keeping about 200 to 300 ft. above Mars, and at all times was directly over him.

For quick starting, Curtiss got off the ground in 87 ft., and Mars, with his 4-cylinder 25 h. p., got off in 106 ft. Both of these distances are behind past performances of Curtiss machines.

The total attendance for the two days was in the neighborhood of 17,000 people.

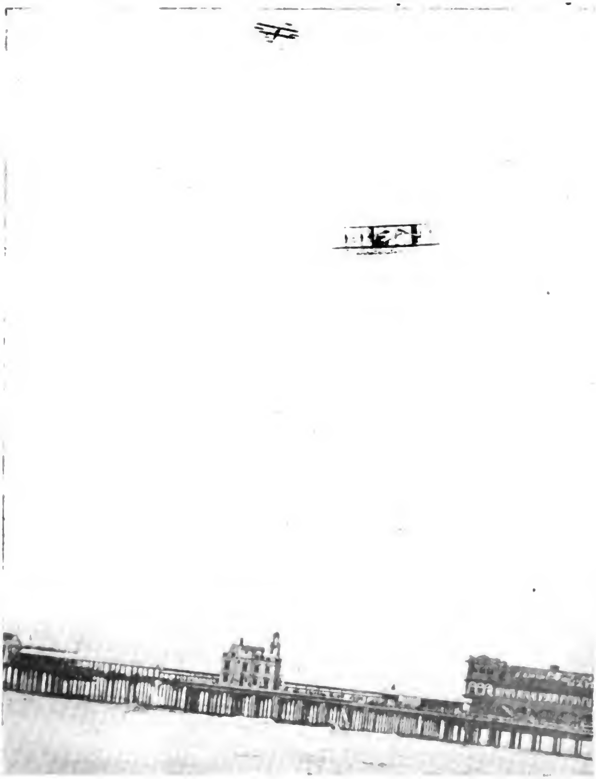
The meet closed when Mr. Curtiss carried R. O. Rubel, Jr., local agent for the Curtiss biplane, for a short flight.

Minneapolis-St. Paul, June 22-25.

At the Twin City meet there were Curtiss, Willard, Mars, Ely, Whipple Hall, Lincoln Beachey with his monoplane and two dirigibles. Curtiss flew, of course, his 8-cylinder machine. Mars had his 4-cylinder Curtiss and Willard had a new Curtiss with a 4-cylinder engine of somewhat greater power, the new engine having slightly larger cylinders. Hall had the old 4-cylinder Curtiss sold to Frank H. Johnson in Los Angeles. Ely had the machine of Henry Wemme of Portland, a 4-cylinder Curtiss. Charles J. Strobel furnished one dirigible with Gintner as aeronaut, while Horace B. Wild flew the Yager airship.

The track was a bad one for aeroplane flights and the attendance small. The track was lined on nearly all sides with buildings or trees and there was only one spot on the grounds suitable for landing. Every flight of any length had to be made out beyond the grounds and return to landing inside. The dirigibles were up every day, but the first. Hall did not get up all during the meet.

All the aeroplanes, except Beachey's and Hall's, made short flights the first day. On the second the two dirigibles and Curtiss were in the air at the same time. Besides the short flights, Curtiss made one very pretty flight outside the grounds and back. Beachey got off a short distance without his controls on.



Curtiss and Brookins Flying at Atlantic City

On the third day Curtiss, Ely and one of the dirigibles were up simultaneously. Beachey had put his elevator and ailerons on and made a short flight. In the evening Beachey made another trial and ran into the fence, smashing up. The fourth day it rained. After the showers, Curtiss made a spectacular flight. Willard and Mars also flew.

Kansas City, July 3-4.

Willard and Beachey went from Sioux City to Kansas City. Willard only flew, Beachey spending his time assembling the Curtiss machine. This meet was also unsuccessful from an attendance standpoint.

Willard made eight or ten short flights each day.

The Omaha meet has been postponed to July 23-28.

Willard is working his way to Mineola, where he will try out a machine of his own make, Curtiss type, with greater spread, the end of July.

Providence, R. I., July 4.

Joseph Seymour was scheduled to fly his Curtiss at Providence, July 4. He circled the track several times at a height of 20 ft. The conditions were ideal but the spectators left before the exhibition was concluded, owing to the repeated delays caused by making minor repairs.

Mars Flies Cross Country.

At Topeka, Kans., J. C. Mars, the only aviator at the meeting, as Willard did not go, as planned, on June 15 attempted to fly 60 miles cross country to Kansas City. A landing had to be made at Grantville after nine miles, breaking a couple of ribs. These were repaired and a second start was made. After going on for four or five miles the engine went wrong and another landing was made, at Newman. After an hour's stop he pluckily went on for a short distance finally coming down at Midland.

Pittsburg, Kans., July 2-5.

BY PAUL W. HARVEY.

Arch Hoxsey made fourteen flights during the 4-day Wright meeting at Pittsburg, Kan. In the last flight, which was to close the exhibition, the wind was blowing very hard and Hoxsey while some 300 ft. in the air shut off his motor intending to glide to the ground, which he had frequently done before. On account of the smallness of the ground he saw that he was being carried in his circles towards the bleacher, which was filled with people. Having no motor power to direct his course beyond the bleachers it seemed to him best to point the nose of the machine directly towards the ground in front of the stand. This he did with a result that the forward steering planes were badly damaged. He fell almost vertically about 40 or 50 ft. but he was not at all injured. The motor and transmission parts were found in good order.

Hoxsey made good flights each day. On the second he made three low flights, circling the field several times and having his machine under perfect control at all times. The first day he left the ground three times when a storm interrupted the exhibitions.

On the third he made four flights. The first three were spectacular exhibitions. He did the "Roller Coaster" flight and turned the figure eight several times. He had wonderful control of the machine at all times and as a climax to the afternoon work he made a beautiful ascent of 1,000 ft.

On the fourth Hoxsey duplicated his exhibition of spectacular flights and also gave some of the feats that aeroplanes are supposed to do in times of war. He made some short and fast short country flights and in the finish carried a passenger three times around the field for a total distance of about two miles.

On the last day Hoxsey made his usual short spectacular flights. In the last one of these he carried Mayor Hoyt and did some beautiful work. Up to that time Hoxsey had not had a single mishap and every attempt that he had made was a success.

Sioux City, Mo., June 29-July 1.

BY P. M. M'CABE.

Due to a wind which ranged from 5 to 18 miles an hour the flights given here by Mars and Ely June 29, 30 and July 1 were far from successful

On June 29 Mars attempted to circle the mile race track, attaining a height of from 10 ft. to 40 ft. Meeting adverse air currents he did not make the circle, stopping several yards short. Ely made a similar attempt but he, too, was compelled to alight without being successful. Two other attempts were made to get into the air but were failures.

On June 30 after 8 o'clock Mars made another attempt and succeeded in getting from 40 ft. to 50 ft. high and went with the rapidity of an express train for a short distance but was compelled to let down because of the winds.

On July 1, in the evening after the wind and the crowd had departed, Mars made a fairly good flight ascending to a height estimated between 100 ft. and 150 ft. He circled the mile course 2½ times and went at a good speed. Ely made one circle of the field the same evening but his engines were not working well and he was compelled to give up before doing anything of a sensational nature. Following Ely, Mars made two other flights in one circling the field twice and concluding his performance with his "Mars glide," dropping from a position of about 75 ft. in the air to an eagle like sweep and then alighting.

Ely is flying now for Curtiss, using the machine sold Henry Wemme, of Portland, Ore.

Aurora, Ills., July 2-7.

BY FRANK H. BEVIER.

A. L. Welch was the Wright aviator who filled the Aurora date. On the 5th after a 20-minute flight he had to land in an oat field. The starting track was brought and in leaving the rail one side of the planes hit the oats which had not been cut low enough and broke several ribs. On the 7th he flew for 55 minutes going up to 512 ft. The wind was bad and Manager F. H. Russell, of the Wright Co., kept the machine over two days in order to satisfy the public.

Monmouth, Ills., July 4.

Charles W. Miller, who bought a machine from C. & A. Wittemann tried for an hour and a half to get his machine to fly but failed.

New Britain, July 2.

Chas. K. Hamilton made a sensational flight over the main street of his home town, New Britain, Conn., on July 2, after a discouraging day. The flight was most sensational. The streets were crowded with people, trolley cars and automobiles. Crowds had come in from nearby towns and the governor of Connecticut with his staff was present. The conflict between two factions of the business men marred Hamilton's efforts. On his first flight he landed in a swamp and broke parts of the machine which necessitated some hours to repair. Still another short flight was made. On the third trial, he went through a series of hair-raising feats for which he is noted and then sailed on his spectacular flight over the main street.

St. Louis, Mo., July 11-16.

St. Louis, July 10. The first aeroplane meeting to be held in this country where entrants have been required to pay a fee to compete and in which there are no hired airmen to take part, will open to-morrow afternoon on the temporary aviation field of the Aero Club of St. Louis at Washington Park, Ill., and continue for six days. Ten machines have been officially entered and it is expected that all will be on the starting line at 3:30 Monday afternoon.

The coming event, known as the First National Aviation Meeting for Novices which was organized by the Aero Club of St. Louis to promote the science and sport of aeroplaning in America, is also unique in the respect that none of the entrants has ever made a public flight for pay or received cash aviation prizes of more than $250. The Aero Club has announced that no flights will be guaranteed, but as nearly all of the machines are built along established scientific lines there is little doubt that there will be flying every day that weather permits Full details will be given in the next issue.

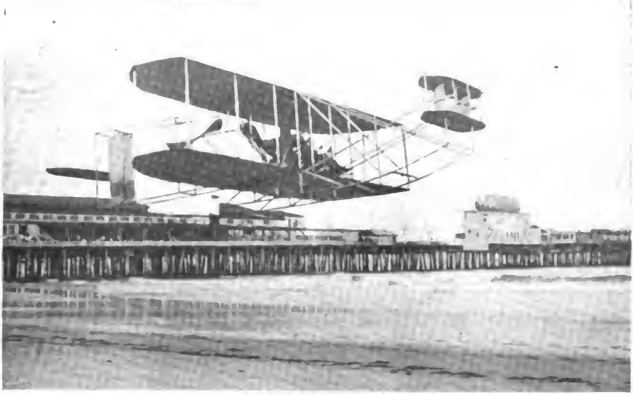
Thomas, Bergstrom and W. C. Robinson failed to arrive and are disqualified.

The following will compete: H. W. Gill, biplane; C. W. Curzon, Farman; J. N. Sparling, monoplane; J. N. Sparling, biplane (Shneider make); H. A. Robinson, monoplane; Charles Kuhno, monoplane; W. F. S. Zehler, fore an aft monoplane; Claude Harris, biplane.

Army News.

From June 1 to June 7 Lieutenant Foulois made five flights at Fort Sam Houston, Texas, in gusty winds up to 15 miles per hour, varying in length from 5 to 14 minutes. No flights were made after June 7, as the Aeronautical Detachment was sent to Leon Springs to assist in installing the annunciator buzzer system at that place.

Captain A. S. Cowan, Signal Corps, now has charge of the Aeronautical Division, relieving Captain Chandler on June 1, 1910.



Brookins Flying Over the Ocean at Atlantic City

Curtiss Drops Bombs from Aeroplane.

Hammondsport, July 1.—Under the auspices of the New York *World* and in the presence of officers of the army and navy, who acted unofficially as observers, yesterday, Glenn H. Curtiss carried out some tests with dropping lead missiles with colored streamers attached at a target representing a battleship 500 ft. by 90 ft.

Then, of 14 record shots, 10 hits were made and 4 misses within 50 ft. of the target. Six hits were made running at 218, 232, 246, 260, 135 and 139 ft. respectively. The seventh and eighth, at 167 and 191 ft., were misses. Next, at 250 ft., hit. At 268 and 312 ft. shots were misses. Last three, at 302, 268 and 260 ft. altitude, were hits. These shots were made moving at right angles to the greatest length of the target. After these tests the officers left.

At sunset four more shots are reported, with three hits and one miss; the latter being from an estimated height of 900 ft., the machine traveling lengthwise the target.

To-day no bomb tests were carried out, but several circles over the lake were made and a landing made in the water. A small hydrocurve surface is affixed just forward of the front wheel for assistance in keeping the machine on an even keel when hitting the water.

RESULTS OF TESTS.

Mr. Curtiss gives it as his opinion that to accurately drop bombs in actual warfare one man would have to be carried for the purpose besides the aviator, as it was impossible for him to make accurate calculations of angle and speed, and suggests the proper method is to have some kind of a gun to fire the projectiles instead of merely dropping them.

Dr. Greene Hits Tree Head On.

Rochester, June 30.—Rochester can now claim to be an aviation city from more points of view than that of engine construction. Dr. Greene, who has, in the past, made several successful flights at Mineola and New York City, and who has recently moved to Rochester to open an aeroplane factory, made his first flight in Rochester to-day.

The biplane which he used was constructed for G. E. De Long of the Elbridge Engine Co., and was equipped with a 4-cylinder Elbridge featherweight engine and a Requa Gibson 7-ft. diameter by 4-ft. pitch regular propeller.

After making his thrust test with the machine tied, and succeeding in developing considerably over 200 lbs. thrust, Dr. Greene decided that he was ready to fly, and the machine was cut loose. After running over the meadow for a distance of less than 100 ft., Dr. Greene rose at what seemed to be an angle of almost 45 degrees to a height of, approximately, 50 ft., and then flew directly down the field of the Rochester Aero Club for a distance of about one-quarter of a mile.

The start had, unfortunately, been made from a point in the field which was protected from the breeze by a large-sized hedgerow of trees, and the doctor did not appreciate the fact that a considerable breeze was blowing from his right, so that as soon as he reached the end of this hedge his machine was thrown to the left a considerable distance. When the doctor succeeded in righting himself, he discovered that he was headed directly for a tall elm tree. Of the two alternatives, dropping down and going under the tree or attempting to fly over it, the doctor chose the latter. It seemed for a few seconds as if he were going to make good, but when he was within a few yards he discovered that it was impossible, and the only thing left for him to do was then to stop the engine and attempt to glide rapidly to the ground under the tree. This also proved to be impossible, and the machine hit the tree head on, at a height of about 30 ft. from the ground, breaking the front control and knocking the machine, of course, to the ground. The rear control was also broken when the bipane struck solid earth. It seemed to the spectators almost impossible that the doctor could be alive and whole, looking at the wreck at a distance of 200 or 300 yards; but he immediately climbed out of the wreck and waved his hand in assurance that he was all right.

The flight, from some points of view, was unsatisfactory, inasmuch as it resulted in smashing Mr. De Long's machine. However, Mr. De Long was more than pleased, inasmuch as it demonstrated that the engine had considerably more power than was actually necessary to fly with this type of biplane. In the next flights that Dr. Greene makes in Rochester with this machine, in all probability, a 3-cylinder feather-weight engine will be used.

At America's Flying Field

Daily Flights at Mineola.

NOT a day now passes, scarcely, without flights by either Harmon, Baldwin, Seymour, Russell, Hamilton and others still experimenting. There are always several hundred people on hand to view the scene and on Saturdays and Sundays the number runs up into two to three thousand. Mineola is 25 miles from New York on the Long Island Railroad, and the grounds are a mile from the station and still further from Garden City.

Philip W. Wilcox has finished and given one trial his Farman-type biplane, fitted with a Rinek 8-cylinder 50 h. p. motor. Lewis Strang, winner of the Briarcliff race, will learn to fly it.

The grounds have been fenced in by the owners of the property with a high board fence 2,500 ft. long along the road, with wire fences extending out across the plains at each. There is another inner wire fence, to keep people off the course and provide parking space for automobiles. A small grandstand has also been erected and an admission fee is being charged on Saturdays and Sundays. After the expenses have been met, it is announced by the president of the land company, the income will be devoted to prizes for the aviators. The use of board fence has been sold to White & Wood, of 1777 Broadway, New York, for sign painting.

After Hitting Tree

On July 3 the first admissions were taken in and a goodly crowd saw Harmon make a 10-minute flight alone and then a short one with a passenger. In the first he essayed the diving trick and quick rises which brought forth applause. William Watson tried out the machine he had just bought from P. Brauner, with Russell's Harriman engine, and got off the ground—and then landed suddenly, smashing up the machine considerably.

The next day Harmon and Russell provided the entertainment, but there was nothing unusual in the flying.

RUSSELL BEGINS PRACTICE.

On June 29, George Russell, who had never operated a machine before, made his first flight in a Curtiss machine, fitted with a Harriman engine. The machine had been exhibited by him during the spring over a theatrical circuit. After a few days he sold the engine to P. Brauner to install in a Curtiss-type aeroplane sold to a customer and then got another of the same make. In five days Russell was proficient enough to fly a distance of about 5 miles.

On June 29 Mrs. Harmon was a passenger with Clifford B. Harmon on a 10-minute flight. This was the first time a woman has flown at Mineola and the third in this country.

Mrs. W. K. Vanderbilt, Jr., was a passenger with Harmon for a short jump of a minute on June 30. The motor would not mote, and a skid broke in landing. Further flying was given up for the day.

Harmon Sets New U. S. Record.

On July 1 Clifford B. Harmon made a new duration record for the United States, 2 hours 3 minutes, beating Paulhan's record at Los Angeles of 1 hour 58 minutes. No official figures were taken, however, of either duration or distance. The Mineola field over which he flew has not as yet been equipped with the proper markers. It is estimated that the distance covered was 100 miles.

HARMON MAKES FIRST CROSS COUNTRY FLIGHT.

On July 11 Clifford B. Harmon attempted to fly from the Mineola aviation field to Greenwich, Conn., in competition for the *Country Life* trophy.

At 5:49 the Gnome engine was got going after much trouble, but the machine did not go a quarter mile across the field before Harmon brought it down again. Hamilton, who had returned to Mineola from Atlantic City, suggested leaving off the pontoons which had been affixed for use in case of a forced descent in Long Island Sound. This was done and a new start made at 6:14:50, but he flew no further than Roslyn, a distance of 4 miles, passing over roads and trees and the settlements of East Williston and Albertson Station.

Stanley Y. Beach was practicing with his Bleriot-type machine at Lordship Park, Bridgeport, intending to try to fly across the Sound to Long Island. After several efforts the machine started for the cliff, but Beach jumped out just in time to save from going over with the machine. The machine fell and was wrecked.

On July 12 Hamilton saw Russell fly for 20 minutes and then took Capt. Baldwin's machine, after weighting down the front end, and flew it for 8 minutes. Russell then went out and flew another 20 minutes.

ISRAEL LUDLOW BUILDING.

Israel Ludlow is building a biplane at Mineola which he states will not infringe anyone's patents. He claims it is a remarkable aeroplane, with its new patented applications of controls and promises it to be so stable that a man can take his hands off the lever; that it is balanced so well that it will find its own level and will keep a level flight without attention on the part of the operator. The machine is expected to be finished by the middle of August.

B. T. Babbitt Hyde is having a shed 70 by 40 ft. erected by C. O. Conklin for the housing of his machine. John H. Tyson, Jr., has bought Greeley Curtis' Bleriot which he recently imported, and it is to be flown by Louis Strang.

On the Aeronautical Society Grounds.

At the present time there are 13 machines on the Aeronautical Society's grounds. Those in process of building, of the biplane type, are Miss Todd, Messrs. Diefenbach, Talmage, Watson and Stevenson, Mergatroyd, and Edick and Edwards; of the monoplane type, Messrs. Godley, Walden De Kildnchevsky, and Rosenbaum.

Creditable flights have been made by Joseph Seymour and George Russell in their Curtiss machines. Russell is using a 30 h. p. Harriman engine, and speaks favorably of it.

Messrs. Edick and Edwards have had their Curtiss type machine out and succeeded in getting it off the ground several times for good distances. At the present time they are changing the angle of incidence of the planes and expect to have it in the field in the very near future.

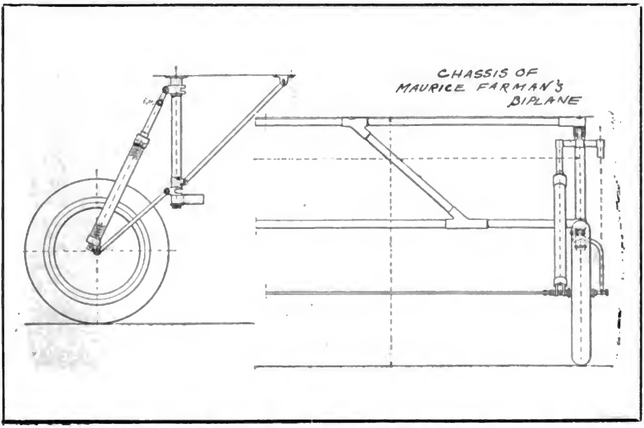
Messrs. Watson and Stevenson have had their machine in the field with a 30 h. p. Harriman motor. On June 26 Mr. Watson made an abrupt ascent for 20 to 30 ft. and descended just as abruptly, smashing the entire outrigging for the elevator control. Mr. Watson was not hurt.

Frank Van Anden has had his machine out several times in charge of Charles Nyquist, formerly with Hamilton. At present Mr. Nyquist is keeping the machine on the ground until they get it thoroughly balanced and he has learned to handle it. The motor is a Harriman.

E. H. Skinner, manager of South Beach, Staten Island, will soon be another addition to the flyers at Mineola. He has a biplane of his own design, fitted with an Elbridge "feather-weight" 40-60 engine, with which he has been making short flights for several weeks past in the vicinity of South Beach.

The Aeronautical Society is building a shelter along one side of its 138-ft. shed, 30 ft. in width to accommodate the machines which are without protection except such as tents afford.

CONSTRUCTION AIDS XIV.



Next Month—Full Page Drawings Capt. T. S. Baldwin's Biplane

For Control of National Affairs

National Council of the Aero Club of America Formed.

The "National Council of the Aero Club of America" was formed at the rooms of the Aero Club of America on June 23, following the breakup, through a shrewd political move on the part of the Aero Club of America, of the intended joint convention of the two organizations, the American Aeronautical Association and the Aeronautic Federation of America.

Twenty-six clubs compose the council. These are as follows: Aero Club of America, California, Kansas City, Kansas State, Dayton Aeroplane, Philadelphia (now extinct), Saratoga Springs, Illinois, Minneapolis, Utah, Springfield, Intercollegiate, Harvard, Baltimore, Washington, Atlantic City, Dayton Aero Club, Pittsfield, New England, Canton, Pasadena, Pennsylvania, Aeronautique of Chicago, South Bend, Buffalo and Milwaukee.

An executive committee and officers were elected to serve until the second Tuesday in December, when a convention will be called in New York.

The executive committee and officers are as follows:

Clifford B. Harmon (A. C. of America), chairman; W. B. Strang (A. C. of Kansas City), A. B. Lambert (A. C. of St. Louis), Dr. J. C. Eberhardt (Dayton Aeroplane Club), Dr. Albert F. Zahm (A. C. of Washington); Vice-Chairmen—George M. Myers (A. C. of Kansas City), Chas. J. Glidden (A. C. of New England), James E. Plew (A. C. of Illinois), John M. Satterfield (A. C. of Buffalo), G. A. Richardson (Intercollegiate Association), Carl G. Fisher (A. C. of Indianapolis), Arthur T. Atherholt (A. C. of Philadelphia).

Henry M. Neely was made chairman of the contest committee, and Arthur T. Atherholt chairman of the press committee. Col. Jerome H. Joyce was elected treasurer; Jerome Fanciulli, secretary, and Geo. B. Harrison, field secretary. Harrison later resigned.

By the terms of an agreement made between the Council and the Aero Club of America, the A. C. A. authorizes the organization of the "National Council of the Aero Club of America" and the A. C. A. is confirmed as the representative of the International Federation; all matters relating to national affairs are to be referred to the Council, to be composed of one member from each affiliated club; the Council will construct an organization on the basis of state representation; the chairman of the executive committee shall be named by the A. C. A.; the matter of location of international contests after the year 1910 vested in the N. C.; a committee shall be constituted by the N. C. to deal with the question of sanctioning national meets, providing the A. C. A. agrees it will not make any agreements or contracts in national relations without approval of the N. C.

SITUATION CURIOUS.

The situation is a curious one. As related previously in AERONAUTICS, the need for a national body was felt and in response to letters signed by Hudson Maxim, president of the Aeronautical Society, sent out by Thomas A. Hill, a large number of clubs signified their acknowledgment of such need and in the course of events a convention was planned at some central city at which a really national body would be formed.

A temporary organization was formed under the name Aeronautic Federation of America to bring about this convention and to prepare drafts and plans for the proposed national body.

Observing the apparent strength of this movement, the Aero Club hastily called a meeting of its affiliated clubs. The majority of the affiliated clubs responding to the call of the Aero Club were disgusted, and then and there, on May 23, formed the American Aeronautical Association. They found that the Aero Club was not willing to give them any voice in the affairs of the Aero Club of America and its affiliated clubs, and, as will be noted from the strong statement issued at the time, the new body was clearly against the policies of the Aero Club of America as exemplified in their action.

Leaders of both the Aeronautic Federation of America and the American Aeronautic Association immediately got together and planned a joint convention to be held in New York, June 22. Both organizations were to assemble in New York as many delegates of the clubs as possible. Both secretaries were to work in harmony and their letters were to be of the same general character. The Hotel Astor in New York was offered as a meeting place and accepted. The A. A. A. was advised that a meeting place had been secured, but unfortunately a misunderstanding had occurred and the A. A. A. letters had called the meeting at the Waldorf.

TO WORK IN HARMONY.

Previous to the June 22d meeting leaders in both these organizations got together and it was planned to call to order such delegates as assembled at either of the hotels, and then adjourn to a common meeting place. The A. F. A. was called to order in accordance with the programme and advised of the misunderstanding in regard to the hotels and it was with common consent that the meeting was adjourned and the delegates in a magnanimous spirit proceeded to the Waldorf to meet in joint convention.

A. F. A. DELEGATES SHUT OUT.

The delegates who happened to come from the Astor experienced the greatest difficulty to being admitted to voting powers in the convention. All sorts of demands were made as to the form of credentials. Many credentials were "lost" by the credential committee. There seemed to be a plan to keep these delegates out. It was also found that one of the delegates who was not empowered by his club to secede from affiliation with the Aero Club of America at the time the A. A. A. was formed, had sent out a day or two previous a great number of telegrams advising that the meeting place of the convention was at the Waldorf and not the Astor, with the apparent intention of stealing whatever delegates they might from the ranks of the A. F. A. despite the tacit agreement that both were working to the same end and in perfect accord. In response to these telegrams, many delegates who had been working with the A. F. A. went to the Waldorf.

CONVENTION AT LAST DOWN TO BUSINESS.

The session was a very strenuous one, and finally everything seemed to be working all right. The delegates had all been admitted and peace had reigned for at least 30 minutes. The whole day had been employed in seating the delegates and the body was now ready for business. A motion was made and carried to adjourn for dinner, to meet again at seven-thirty.

One of the members of the Aero Club of America invited some of the delegates to dinner and a plan was laid at this meeting to withdraw from the convention at the evening session and retire to the Aero Club of America. What mess of pottage the Aero Club could offer in exchange for the birthright of the delegates is not apparent. At any rate, the scheme worked.

When the meeting was called in the evening, the presiding officer, Geo. M. Myers, of Kansas City, asked Lee S. Burridge, former president of the Aeronautical Society and one of the prime movers in the A. F. A., to take the chair while he was out temporarily. No sooner was the temporary chairman ready to receive motions than the delegate from the Pennsylvania Aero Club got up and withdrew his club from the convention. In rapid succession one-half of the other delegates followed suit, showing that the plan so suddenly developed at the dinner had worked most successfully.

How men of self-respect could stoop to such methods as to place an innocent man in such a curious predicament, is difficult to understand. It also developed at about the same time (through the arrival of afternoon newspapers) that a corporation had been formed at Albany under the name of the American Aeronautic Association, despite the fact it was agreed between the leaders a month previous that even the name of the proposed national body would be left to the joint convention to select. This showed a premeditated plan to steal the convention. Even some of the delegates who met at the Hotel Astor, and who had so much trouble in the morning in being admitted to the Waldorf meeting, deserted the very ones who started the whole movement, and which made a national body possible at this time.

The organizers of the A. A. A. were frankly bitter against the Aero Club of America and yet they joined hands with their enemy to the desertion of their own comrades.

WHERE IS THE N. C. OF A. C. A. AT?

An officer of the National Council of the Aero Club of America states that the Aero Club of America is now but a local club on the same standing with the others, that the Council will see to it that the club is kept in such position, that in the future the Council will rule and that the only thing the Aero Club retains is its name and its international affiliation, that the A. C. A. is required to represent the National Council in international matters and to carry out its mission—that the A. C. A. is "down and out."

On the other hand, it will be the chairman of the National Council's executive committee that is named by the Aero Club of America; the clubs now forming the N. C., it is said by the Aero Club, are but affiliated clubs of the A. C. A., coming meekly into the fold after rebelling, and in added numbers; and the A. C. A. never had any national control except over the old half-insurgent affiliated clubs.

The one inference to be drawn from the situation is that the Aero Club of America has decidedly increased its strength by inducing the clubs forming the National Council to become affiliated under the name of the Aero Club of America and by naming its own chairman. In return, the A. C. A. allows the affiliated clubs now known as the National Council of the Aero Club of America to merely select the place of holding any national event which may be won by a representative of America.

THE A. F. A. MADE PERMANENT.

Those who remained in convention after the exodus included the representatives of the aero clubs of Rochester, N. Y.; Florida, West Side Y. M. C. A., Canada, Amherst and Springfield, Mass.; Aeronautical Society of New York, Aeronautic Society of New Jersey, Philadelphia Aeronautical Recreation Society, the Y. M. C. A. Alumni Aeronautic Club, and the Southern Aero Club. Subsequently the representative of the aero clubs of Amherst and Springfield, Mass., withdrew and announced he would go with the other organization. The following officers were chosen by the Aeronautic Federation of America, which organization was made permanent:

President, Hudson Maxim, New York, N. Y.; vice-presidents, L. J. Seeley, Rochester, N. Y.; George W. Clark, Jacksonville, Fla.; Dr. Thomas E. Eldridge, Philadelphia, Pa.; Wilbur R. Kimball, New York, N. Y.; secretary, Thomas A. Hill, New York, N. Y.; supervisor, Lee S. Burridge.

Second Annual Aero Show of the Pacific Aero Club

By Cleve T. Shaffer

The second annual aeronautic exhibition of the Pacific Aero Club from May 19 to 21, inclusive, at the Auditorium, San Francisco, was a great success from an exhibition standpoint, the variety of machines giving a liberal education in aeronautics. To one who had seen the first exhibition of the club, it gave a startling idea of the marvelous progress in the science in less than a year, and the tremendous increase in public interest. At the first show there were but two comparatively crude machines—the latest show filled the hall and even intruded upon the model flying area, several of the model flyers, disobeying their rudders, flew into the big machines like angry hornets and tore rents in their fabric.

Two of the large aeroplanes exhibited had actually flown and attracted a large amount of interest on that account. They were the Curtiss-Herring of Whipple Hall of the Pacific Aero Club and the beautiful large monoplane of George Loose of the Pacific Aero Club. The latter has not made extended flights, but is reported to have cleared the ground for a short distance.

The exhibits composed four full-sized aeroplanes (three monoplanes and one biplane), a balloon, a dirigible, gliders, models, kites innumerable, propellers, supplies and aeronautic accessories and a United States signal corps portable wireless set.

A novelty on the Curtiss was the 5-ft. extension of each end of the upper planes, as shown in photo. This was an idea of Mr. Hall's; he claims that the additional surface (30 ft.) permits of much slower speed in rising. The short beams or wing bars fit into the end sockets and a bracket braces them to the end strut.

The little "Demoiselle" monoplane, also exhibited by Mr. Loose, was the hit of the show, its small proportions being somewhat startling to the visitor. The body (not imported) was equipped by Mr. Loose with an extra pair of skids at the rear of the planes. Power plant: A 4-cylinder Hall engine of 35 h. p., 138 lbs., driving a Coffin "parabolel" propeller, a small Curtiss type radiator was placed at rear of motor, both being mounted on the single upper member of the triangular body, the motor being also guyed to the lateral wing bars. Dimensions and control similar to the original "Demoiselle" with the exception of lateral control, in which the Vendome front flaps are used. Single surface cloth tacked on with tape. Lateral beams underneath as in the Curtiss and Pfitzner.

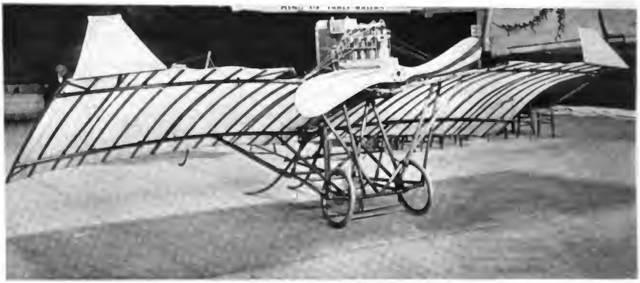
On the whole, the machine lacked the finish and careful attention that characterized the large monoplane built by Mr. Loose himself. The latter machine was exhibited without the motor. Its beautiful lines were admired by everyone. This was shown in the July issue.

An "all-steel" monoplane was exhibited by A. Soring, the ribs even being of small tubing. Surface, 240 ft. Weight, 200 lbs. without power plant, cloth or operator. Three-wheeled chassis, rear rudder turning with rear wheel, which also carries a supplementary surface, to the rear diagonal edges of which are attached the two separate flaps of the elevator. Lateral control by ailerons. One lever control.

A most curious oddity was the exhibit of Israel Baylis; it might appropriately be termed the paradox of the show. Whereas all other exhibitors seeked to eliminate weight, in this case weight was a desirable factor. The model (see photo), about 2½ ft. square, weighs 60 lbs. and has two wagon springs fixed to the base, between the ends of which (one on each side) is pivoted a heavy pendulum. This is to be driven, at a high speed, by gears and chains from the motor. The inventor claims that a reaction of the machine from the rapid pendulum blows on the spring ends, which cause it to lift.

President J. C. Irvine of the Pacific Aero Club exhibited his battle-scarred balloon, "Queen of the Pacific." Capt. P. A. Van Tassel was early on the scene with a new 8,000-ft. dirigible, 14 ft. diameter by 63 ft. long.

Gliders were exhibited by William Kreling, Ohrt Bros., M. Gunzendorfer and J. Musser, C.



Demoiselle Built By Geo. H. Loose.

Gray and E. Speyer, R. Hughson and L. Schultz, and the Shaffer Aero Manufacturing and Supply Co.

Kites, including a Philippine war kite, used as a target at 600 metres, were displayed at one end of the hall, while at the other were the large number of models. Several of the well-known "parabolel" propellers were exhibited by A. Coffin.

The Pacific Aeroplane and Supply Co. exhibited several samples of fine work in wing construction.

The Shaffer Aero Manufacturing and Supply Co. had a large exhibit of aero supplies, including gliders, wheels, tires, propellers, wire, laminated ribs, tanks, etc. The AERONAUTICS stand by the above company was visited by many of its western friends.

The Pacific Aero Club reception room and booth were well crowded; many new members have joined since the show.

William Kreling won the glider cup. His glider was a beautiful machine "de luxe."

Model contest winners were Waldo C. Brown, Fred Hotchner and Harold Willots.

Aeronautic Calendar for U. S.

July 9-16—Toronto, Can., aviation meet.

July 16-17—Grand Rapids, Mich., J. C. Mars.

July 16-17—Decatur, Ill., Chas. F. Willard.

July 23-28—Omaha, Neb., G. H. Curtiss, C. F. Willard, J. C. Mars.

Aug. 6-8—Pittsburg, Pa., J. C. Mars.

Aug. 12—Indianapolis, Ind., balloon race.

Sept. 5-10—Lincoln, Neb., exhibition flights by Wright aviators.

Sept. 5-10—Hamline, Minn., exhibition flights by Wright aviators.

Sept. 12-16—Milwaukee, Wis., exhibition with one Wright machine.

Sept. 17—Indianapolis, Ind., elimination race for Gordon Bennett balloon race.

Sept. 19-24—Detroit, Mich., Wright exhibition flights.

Sept. 26-30—Trenton, N. J., exhibition flights by Wright aviators.

Oct. 1-8—Springfield, Ill., exhibition flights by Wright aviators.

Oct. 3-8—Sedalia, Mo., exhibition flights by Wright aviators.

Oct. 8-13—St. Louis, Mo., Aero Show.

Oct. 15-23—Mineola, N. Y., Gordon Bennett and other aviation contests.

Oct. 17—St. Louis, Mo., Gordon Bennett balloon race.

Dec. 1-8—Chicago, Ill., aeronautical exhibition of A. C. of Illinois.

Chronology of Foreign Happenings

June 3. Marcel Hanriot, aged 15, flew a Hanriot monoplane cross-country, Betheny to Mourmelon, 35 kil.

June 5. Capt. Burgeat, French military flyer, using an antoinette, flew 1 hr. 5 m. at Mourmelon and over surrounding country.

871 MILES FLOWN IN THREE DAYS.

June 6. The Anjou meeting closed this day. The total distance flown by six aviators was 1,403.4 kils. (871.5 miles). Sommer machines first and second; Farmans third and fourth; Bleriots fifth and sixth. Greatest distance flown without stop: Martinet (H. Farman), 168.2 kil.; Paillette (Sommer), 125.9 kil.; Dickson (H. Farman), 98.7 kil.; Legagneux (Sommer), 97.8 kil.; Aubrun (Bleriot), 31.3 kil. $8,800 in prizes divided. Martinet (H. Farman) won Angers-Saumur cross-country race (42 kil.) in 31 m. 35 s. (49.5 m. p. h.).

June 7. Marcel Hanriot flew back to Betheny accompanied by M. Niel in a Voisin, and Lieut. Fequent and Capt. Marconnet in a Farman. The first two landed at Betheny, while the other, bearing the officers, went on, over Rheims and back to Chalons, covering 98 kil. in 1 hr. 37 min.

June 8. Leon Morane (modified Bleriot XI fitted for two people) flew cross-country, Issy to Toury, with stop at Etampes, 93 kil., in 72 mins. flying time.

Verstraten (Sommer) carried a passenger for 55 mins.

June 9. Lieut. Bellenger flew a H. Farman 1 hr. Mourmelon.

WORLD CROSS-COUNTRY 2-MAN DURATION AND DISTANCE RECORDS.

June 9. Capt. Marconnet and Lieut. Fequent, two military pupils using H. Farman machines, flew from Chalons to Vincennes, 160 kil., time 2 hr. 30 m. With oil and gas the weight carried was 462 pounds. Capt. Marconnet held the map and took photos.

June 10. Dubonnet (Tellier) flew 120 kil. at Juvisy track.

2-MAN MONOPLANE RECORD.

June 11. Leon Morane (Bleriot) beat the world's monoplane passenger record, flying in a circle over Toury for 1:30:00.

June 11. At Juvisy meet, Dubonnet flew 65.36 kil. in 1:14:00; Didier (H. Farman), 57.8 kil. in 1:04:00.

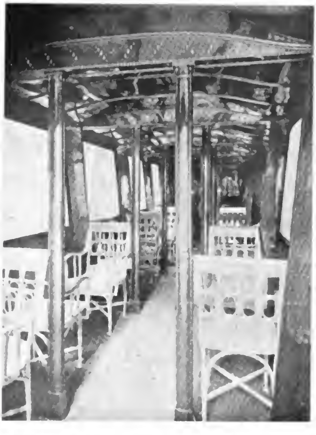
TWO-HOUR FLIGHT.

June 11. Budapest meeting closed. Total time 10 machines flew, 50 h. 16 m. 48 s., and still other machines flew not entered for duration prizes. This time runs from more than 12 hrs. for Nicholas Kinet (H. Farman) to 2 hrs. for Mme. de la Roche. Longest flight without landing prizes awarded as follows: Wagner (Hanriot), 2:03:46; Illner (Etrich), 1:45:40; N. Kinet (H. Farman), 1:44:50; Wachalowski (H. Farman), 1:13:29. The greatest distance in one flight was 137 kil. by Wagner.

June 12. Capt. Marie (H. Farman) flew for 1:10:00 and 1:05:00 on the same day.

June 19. The German Clouth airship sailed from Cologne over the French and Belgian frontiers unnoticed, landing at Etterbeck, near Brussels, Belgium. The distance covered was about 125 miles and the duration 5 h. 20 m.

June 20. Labouchere (Antoinette) flew from Mourmelon to Betheny. Recently while carrying a companion, at Chalons, Labouchere proposed a drink and proceeded to fly to a cafe at Mourmelon. Served, the return was made to the camp.



Passenger car of the "Deutschland" Airship

Sommer has delivered his first military aeroplane to the French army after a demonstration flight of 2:10:00.

PASSENGER AIRSHIP MAKES LONG TRIP.

June 20. Leaving Friedrichschafen the new aerial liner "Deutschland" (Zeppelin VII.) sailed to Dusseldorf, a distance of about 311 miles, the trip lasting 9 hours. Count Zeppelin was in command, and there were a dozen others on board. The new Zeppelin is similar to its recent predecessors, except that there is an inclosed gangway connecting the two cars and between them is the compartment for passengers. The walls are of mahogany covered aluminum and the furniture consists of wicker chairs. The length is 148 m. (485 ft.) and 14 m. in diam. The capacity is 19,000 cu. meters.

June 21. Tabateau (M. Farman) flew 1:14:00 at Buc, covering about 108 kil. over nearby towns.

June 23. Lieut Fequent flew from Issy to Vincennes on his H. Farman.

June 24. The "Deutschland" undertook its first regular passenger trip, with a crew of 12 and 20 passengers. Three hours were spent cruising around Dusseldorf. During part of the time there was wind and rain, but the elements seemed to have no bad effect.

2775 MILES FLOWN IN A WEEK.

June 25. Rouen meeting closed. The total mileage flown was 2775 miles (4469 kil.) divided among various machines as follows: H. Farman 1095, Bleriot 900, Antoinette 713, Tellier 507, Hanriot 489, Demoiselle 261, Sommer 411, Breguet 36, Voisin 57 kils; $30,654 distributed in prizes. The greatest total of flights by one man was 464 miles, by Bertram Dickson. The longest distance flown without stop was by Dickson (H. Farman), 141 kil., in 2:27:44.

AIRSHIP "DEUTSCHLAND" DESTROYED.

June 28. The Deutschland, carrying a crew of 12 and 21 passengers, left Dusseldorf for a 3-hour trip. One of the propellers stopped after 2 hours, and a storm rapidly came up. Finding it impossible to reach Munster, Osnabruck was made for, but as the ship had been in the air 9 hours, the gasoline supply gave out, and left the vessel at the mercy of the storm. It finally settled down on the trees of a forest, and the passengers escaped with their lives.

June 29. Lieut. Savoia made a cross country flight of 40 miles from Centocelle, Italy, and the day following one of 22 miles in his H. Farman.

June 30. S. F. Cody tested his new biplane. The twin propeller system has been abandoned. Two engines have been fitted to drive a single propeller. Either can be operated individually. After making two circuits of Laffan Plain a gust of wind caused the machine to fall, and Cody was pinned unconscious in the wreckage. The two engines are of the 50 h. p. 4-cyl. Green type.

June 30. Labouchere (Antoinette) and C. L. Wachter (Antoinette) flew from Mourmelon to Betheny for the meeting there.

July 2. The Wolverhampton, England, meet closed. Grahame-White (Farman) was longest in the air in one flight, 1:15:38; L. D. L. Gibbs (Farman) second with 1:13:5.

$5,000,000 FOR AVIATION.

July 2. The Italian Chamber of Deputies has granted about $5,000,000 for construction and maintenance of aeroplanes and airships.

FRENCH ENTRIES FOR INTERNATIONAL.

July 3-10. Seventy-six entries in the Rheims meeting. Monoplanes entered, 29. Leblanc, Latham and Labouchere were picked to represent France in the International at Mineola, L. I. In Leblanc's flight he broke the 5, 10, 50, 60, 70, 80 and 90 kil. speed record.

BARONESS MEETS WITH ACCIDENT.

July 8. Baroness de la Roche met with an accident at the Rheims meet, suffering severe injuries. She had apparently become unnerved by the close passing of two other aeroplanes. One of the passing aeroplanes flew directly over her, and it is thought that the draft from its propeller made trouble for the baroness.

GRAHAME-WHITE FLIES 90 M. CROSS COUNTRY.

July 11. Grahame-White flew a distance of 90½ miles in to the Bournemouth aviation grounds where a meet was in progress, in 2 hours 35 minutes. On July 7 he started from London to make the entire distance, but an accident compelled him to land after going but a short distance.

BRITISH ALTITUDE RECORD.

J. A. Drexel made two ascents on July 11 at the Bournemouth meet of 1950 and 2493 feet altitude in his Bleriot. On June 20 he went up to 1070 feet.

New Prizes Abroad.

The London *Daily Mail* has announced the conditions for its new $50,000 prize. The contest is open to the entire world, to be held the second week of July, 1911. The winner will be he who starts from a fixed point near London and completes a 1,000 mile course laid out over various cities in England and Scotland, and making a complete tour of Great Britain.

The Automobile Club of France offers a $30,000 "Grand Prize" for an aeroplane flight from Paris to Brussels and return, divided between the three who cover the course in the fastest time before January 1, 1911, the machine to carry two people, or two with ballast enough to make up a weight of 150 kgs. Must be made within 36 hours, starting from Issy. One descent at Brussels is obligatory. To take not more than 3 hours.

$10,000 is offered for dirigibles over a course Paris to Rheims and back, given to the pilot making the best time before January 1, 1911. Start and finish at Vincennes. One descent obligatory at Rheims, where an extra passenger must be taken up of a weight of 75 kgs. Duration of landing counts as part of the time.

M. Lazare Weiller, who was connected with the French Wright Syndicate, has offered the War Minister of France a $5,000 prize for a dispatch carrying competition between military aviators, carrying a passenger.

The H. Farman instruction biplane covers practically every day a total distance of 200 kils. with two on board.

AEROPLANE RISES FROM WATER.

Henri Fabre, with a monoplane of 50 h. p., Gnome engine, mounted on 3 hydrocurves, has been able to fly a distance of 5 kils., rising and alighting on the water. The speed attained was 100 k. p. h. The speed is 14 m.

One hundred and eleven aviation pilots here received licenses from the Aero Club of France. These are divided among various makers of machines, as follows: (Mme. de la Roche is the sole woman pilot.)

Bleriot 24; Curtiss 2; R. E. P. 1; H. Farman 30; Voisin 15; M. Farman 1; Wright 10; Antoinette 9; Demoiselle 2; Sommer 4; Hanriot 2; Tellier 1; Nieuport 1; Breguet 1; Sanchez-Besa 1; Goupy 1; Unnamed 6.

Aeroplane and Airship Casualties.

VICTIM OF HIS OWN COURAGE.

June 18. Thaddeus Robl, who learned to fly a Farman, was killed at Stettin, Germany. The wind was blowing and no aviator would fly. The crowd became angered, and called for Robl, who attempted a flight. Descending from a height of 200 feet, a gust caught him and he was buried under the wreckage, with his neck broken. He expired in a few moments.

WACHTER'S AEROPLANE FALLS.

At the opening of an aviation meet at Rheims, July 3, Chas. Louis Wachter met his death in an Antoinette aeroplane. The wings seemed to fold up, letting the machine drop without resistance to the ground from a considerable height.

Oscar Erbslöh

DIRIGIBLE EXPLODES.

On July 13, Oscar Erbsloh, the winner of the Bennett balloon cup at St. Louis, 1907, with four companions fell from the non-rigid dirigible "Erbsloh" when it was at a height of over 900 feet. The cause is stated to be the bursting of one of the ballonets. It is thought possible that the expansion of the gas at the high altitude caused the bag to burst.

The airship had a cubic volume of 2900 cubic meters, was 53.2 meters long and 10 m. diam., driven by a 125 h. p. Benz motor. The speed was 29 m. p. h. and could carry 6 people. The propeller was forward, of 2 blades, and 4.5 meters diam.

DEATH OF ROLLS.

The Hon. C. S. Rolls met with his death at Bournemouth, Eng., July 12, while flying his Short-Wright machine in a contest for landing nearest to a predetermined spot. Just what happened it is impossible to determine at this moment. The motor had been shut down previous to the glide down.

The Hon. C. S. Rolls, son of Lord and Lady Llangattock, has been one of the foremost in aeronautic sport. When the automobile came into being he was an ardent supporter, winning several races. He has made more than a hundred balloon ascents, and last year took up the aeroplane. Recently he jumped to the front with hour flights and more, crossing the English Channel and returning without stop.

OTHER DEATHS IN POWER MACHINES.

Sept. 17, 1908, Lieut. T. E. Selfridge, at Washington.

Sept. 7, 1909, E. Lefebvre, Juvisy, France.

Sept. 22, Louis Ferber, Boulogne, France.

Dec. 6, A. Fernandez, Nice, France.

Jan. 4, 1910. Leon Delagrange, Bordeaux, France.

Apr. 2, Hubert Leblon, San Sebastian, Spain.

May 13, Hauvette Michelin, Lyons, France.

June 18. Thad. Robl, Stettin, Germany.

July 3, C. L. Wachter, Rheims, France.

———, Zosely, Budapest.

July 15. Daniel Kinet, Brussels, Belgium.

THE NEW FARMAN MONOPLANE

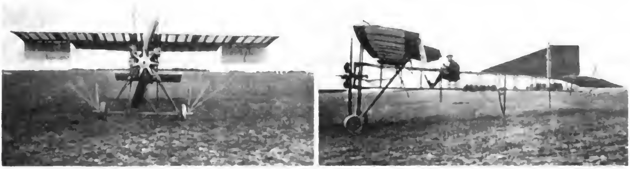


Photo by Edwin Levick, N. Y.

Henry Farman has begun trials with a new monoplane. The spread is 23.6 ft., depth 6 ft. 6 in.; the tail measurements are 9 ft. 10 in. by 3 ft. 3 in., and the overall length of the machine is 26 ft. 2 in. The supporting surface is practically 190 sq. ft. So far as can be gathered from examination, the wing curvature is the same as for the standard biplanes. The tail is 9.8 ft. by 3.28 ft. The total weight of the new machine is given as 660 lbs.

Lateral stability is secured by two ailerons of the familiar Farman type. The Farman is the only successful French monoplane employing ailerons, the Antoinette having abandoned them in favor of flexing the wing, Bleriot, Tellier and Hanriot never having employed them. The horizontal tail member has one half of its surface fixed and the rear portion hinged to form an elevator. On the more recent biplanes the extremity of the upper tail member has been made pivotable, to operate in conjunction with the front elevation rudder, but this movable surface was only about one quarter of the whole; on the monoplane it is half the depth of the plane. The rudder is mounted entirely above the horizontal plane, and had ahead of it a triangular shaped pin.

The fuselage is a triangular structure united at the forward end by steel girder work in the form of a cross, the center of which serves to receive the mounting of the fixed shaft of the Gnome motor. The four main frame members are united by suitable stanchions, and trussed with piano wire; they are not united at the rear. The wings are not mounted directly on the fuselage, but are carried almost two feet above it. This places the pilot, the motor, and the petrol and oil tanks on a lower plane than the bearing surface. A triangular structure receives the wings, and at the same time serves for the attachment of the running gear.

At right angles to the longitudinal frame members are two vertical members, attached to the steel girder work on the fore end of the fuselage, and mounting above the level of the wing and descending considerably below the level of the frame. From the lowest point of these two uprights are two similar members inclined towards the rear, attached to the two longitudinal members of the fuselage, and receiving on their upper extremities the rear transverse girder of the wing. This, as can readily be seen from the illustration, forms a triangle—or really two triangles, one at each side of the fuselage—the apex of which is near the ground, and receives the axle of the running wheels and the base above the main plane.

The rear plane is mounted directly on the fuselage, with the hinged portion overhanging in order to allow free movement. The rudder and fin are mounted above the fuselage, and consequently above the horizontal plane. There are neither shock absorbers or skids, the aeroplane starting on two small diameter pneumatic-tired wheels mounted on a steel axle passing through the points of the two triangles already described. Towards the rear of the aeroplane is a simple type of skid to prevent the tail from trailing on the ground. The pilot's position is within the fuselage, just to the rear of and below the level of the wing.

The fuselage is not encased. The motor, of course, is in the usual position ahead, overhanging the extremity of the fuselage. It is the standard type of Gnome, with a two-bladed Chauviere propeller. Placed below the level of the wings, the pilot has the advantage of being able more correctly to estimate his distances for landing than is possible when carried slightly above the wing level. Further, this advantage is gained without any loss of protective material in case of a rough handling, there still being the motor and half the length of the fuselage ahead, the wings on each side, and the running gear below, to take the shock before the pilot can be reached. The machine's first appearance in competition will be interesting.

News In General

International Aviation Tournament at Mineola.

The national and international aviation meeting for 1910 will be held near Mineola, L. I., about one mile east of the present aviation field, beginning Oct. 15 and closing Oct. 23. The international speed contest for the Gordon Bennett trophy will take place on Oct. 22.

For this contest there will be at least 11 competitors—three from France, three from England, one from Italy and three from America. Elimination races for the selection of the French team were held in Rheims, July 5, when Latham, Leblanc and Labouchere were chosen. Latham uses an Antoinette and the other two Bleriots.

Grouped about the international speed championship contest will be an interesting program of events, including many novelties and extraordinary feats for aeroplanes. This program is now being arranged, and will be announced as soon as possible. Cash prizes amounting to about $50,000 will be awarded for the most important achievements, with several special prizes for other events.

Contracts are soon to be awarded for the building of the grand stands, aerodromes, etc., and the field, two and one-half miles in length by one mile in width, is now being put in proper shape.

In addition to the regular challengers for the international trophy, it is expected that a large number of foreign and American aviators will take part in the general program. Inquiries have already been received from many European aviators, and no doubt many machines will actually fly over the course during the meet. It has not yet been determined who the American cup defenders will be, but it is expected that Glenn H. Curtiss, winner of the trophy last year, will be one of the three.

Lawrence L. Gillespie of the Aero Club of America, chairman of the subscribers' committee, reports good progress in raising the $250,000 necessary to finance the meeting. The committee has appointed Gage E. Tarbell as general manager and Byron R. Newton as assistant manager, with offices at 320 Fifth Ave. Announcement of the prizes and program will soon be made.

Aviation Treaty Between Mexico and the United States First of Its Kind.

By E. L. Ramsey.

THE Foreign Office confirms the statement that negotiations are under way for the celebration of a treaty between Mexico and the United States for the purpose of regulating aerial traffic over the border line of the two countries with the special view of preventing smuggling.

So within a short time it will be illegal for an American to visit Mexico in an aeroplane or dirigible balloon, because it would violate the treaty which is being negotiated between the United States and Mexico.

Charles K. Hamilton has already crossed the Rio Grande at Ciudad Juarez and El Paso in an aeroplane, and the long flights that are now being made are sufficient notice that such events will not be remarkable in the future. This makes it necessary for the two governments to extend the provisions of their treaties regarding immigration and the collection of customs duties so that inspections may be made in the interior as well as on the border.

The officials of the State Department have made many favorable comments on the advantages to be derived from such a treaty.

AMERICANS TO FLY IN MEXICO NEXT FALL.

Joseph Hidalgo and Sparks M. Berry, of Los Angeles, have made proposals to take part in the centennial celebrations in Mexico City this fall. They propose to bring a number of aeroplanes, with expert aviators, dirigible balloons and several aerostats. This has given rise to new hopes on the part of Governor De Landa y Escandon of the Federal District to make this one of the drawing cards of the event.

The matter will be discussed by the national centennial committee, of which Mr. Landa y Escandon is the president, at the next meeting, and no reply will be given to either of the proposals until then.

Terms of Chicago-New York Flight Announced.

Dates have been set for the contest to be held under the auspices of the New York *Times* and the Chicago *Evening Post* from Chicago to New York for a prize of $25,000. The race will start October 8 from the Windy City.

A resume of the conditions follows: Entries may be made at any time after publication of the terms. There must be at least three competitors or no race. The start shall be 10 o'clock a. m., or as soon thereafter as may be, and shall be simultaneous, if possible. In case of bad weather, the start may be postponed from day to day until Oct. 15. Each entered machine must be in Chicago by Oct. 3 and give daily trial flights until start. The race must be finished within 168 hours from the start. Stops unlimited. Each entrant must have a verified record of one hour's continuous flight in Chicago between Oct. 3 and 8. Repairs may be made en route, but aviators must finish in the same machines they make the start. If the start is simultaneous, the first machine that reaches the finish within the rules will be adjudged winner, but in case the entrants start at intervals, due allowance will be made. A flight of equal or of greater length than the proposed course, prior to the race in this country, shall serve to invalidate its terms. The promoters of the event reserve the right to delegate the management of the affair to a recognized aeronautical society if such a course is deemed advisable.

Public school 77 of New York celebrated a "safe and sane" Fourth by having a free balloon ascension in addition to kite contests. It was not intended to be of the free variety, but the bag took charge of itself and sailed over to Maspeth, L. I.

An 18-ft. balloon was furnished by A. Leo Stevens and a generating plant was installed in the Central Park yard at 97th St. After inflation was complete, the balloon was guided over and under trees in a brisk breeze, up Eighth Ave. to 106th St., sustaining small holes in the journey. These were patched up, and the balloon, decorated with flags, was sent up at the end of a 2,000-ft. rope. In pulling the balloon down in the late afternoon, the rope broke and the balloon slowly went out of sight. Not being quite full, there was ample opportunity for the gas to expand. When found, it showed signs of having burst at a great altitude.

Clifton O'Brien of the Pacific Aero Club is flying a Farman type biplane with a 60 h. p. Hall engine.

St. Louis Aero Show.

That exhibits of complete aeroplanes and motors built expressly for aerial use will be the feature of the St. Louis National Aero Show, in the Coliseum, Oct. 8 to 13, is now assured by contracts for floor space which have been made by several well-known concerns, among them the agents for the Gnome motor, to which Paulhan and Farman attribute much of their success.

Complete aeroplanes and a new aero motor will be shown by the Aerial Navigation Co. of Girard, Kans. This concern has already completed three machines of the same type, which are reported to have been sold, and has now constructed three more.

The Aeromotion Co. of America (St. Louis) has taken space in which to exhibit the Gnome motor, and has reserved additional room for exhibiting two types of foreign-made aeroplanes for the agency of which they have about completed negotiations. Marc Seguin of the Aeromotion Co. cabled to the French house of Gnome motors before taking space and learned that the company could furnish a motor for exhibition at the time of the show. It will probably be the first Gnome motor shown in St. Louis.

Another type of rotary motor, which works upon practically the same principle as the French-made Gnome, will be exhibited by the Holmes Rotary Motor Co. of Denver, Colo. The Western Oil Pump and Tank Co. (St. Louis) has taken space, and will exhibit its regular line of tanks and self-measuring pumps, but in addition to this, it is rumored that this company will show something novel in the way of an aerial accessory which will be of considerable importance to airmen.

The Aeronautic Supply Co., which has just opened a store on Olive St. in the heart of the automobile district, will be another St. Louis exhibitor, showing practically everything for the construction of complete planes as well as the finished machines. This concern has already placed St. Louis in an important position as far as the aeronautic industry is concerned. It was the first aeronautic supply house in America, and it is said that its present number of clients is 3,000 people, embracing the entire country, Canada and Mexico.

The eight or ten airmen about to take part in the novice meet of the Aero Club of St. Louis are very much interested in the coming aero show, and have expressed their intentions to have exhibits there, provided they are successful in their work this summer.

Hamilton Tries Two Cycle Engines.

Charles K. Hamilton, who has split with Curtiss, has borrowed for temporary use the Curtiss type aeroplane built by Fred Shneider for G. E. DeLong of the Elbridge Engine Co. of Rochester, and expects to use it in demonstration flights at Mineola until his own high-powered racing machine is completed, which will probably be the first part of August. The De Long machine is equipped with an Elbridge two-cycle 40-60 h. p. engine, Bosch magneto and Requa-Gibson propeller, El Arco radiator and Hartford tires. This is the same machine which Dr. Greene flew at Rochester.

C. W. Bennett, who was associated with Messrs. Wilcox, McDonald and Carruthers in getting up the Montreal meet, has disposed of his interests and has joined hands with the Aviation Co. of Canada.

The Aviation Co. of Canada has been organized with offices at 291 St. Catherine St., Montreal, with the primary object of promoting so-called "meets," supplying fairs, etc., and has secured representation in the maritime provinces and the west.

John McGovern on June 17 delivered a panegyric an hour and a half in length, entitled "The United Brethren, Wilbur and Orville," at the Press Club of Chicago.

Rules for $15,000 Prize.

The rules for the Edwin Gould $15,000 prize have been formulated, and are, in short, as follows:

> For the most perfect and practicable flyer designed and demonstrated in this country, having two or more power plants, capable of working independently or in conjunction. File complete specifications and drawings with contest committee, *Scientific American*, 361 Broadway, New York, on or before June 1, 1911. Contest takes place July 4, 1911, and following days. Two machines must enter or no award.
>
> Before competing, applicant must have made flight at least one hour, using but one power plant, and must also in same flight drive engines alternately and together. Open to any gasless apparatus. No entry fee. Location of place of trial to be announced about June 1, 1911.

Kite Contests at Mineola.

Edward Durant is directing kite flying and model contests every Saturday at Mineola. Two score boys started the first of the series on July 4th for a cup offered by Mr. Durant. At the end of an hour many of the kites had escaped and the contest was brought to a close. The three prizes went to Frank Krug, John Kinsella and Carl Morehouse respectively.

Pennsylvania Club Has Grounds.

The Pennsylvania Aero Club is building six sheds at Clementon, N. J. Edward Augsberger is working on his machine in one shed, the Lesh aeroplane belonging to Herbert Hazzard is another and Louis Bergdoll who bought a Bleriot some time ago will probably use another shed. A meet is in anticipation for the Fall.

Armour Institute's Aero Course.

The rapid development of aerial navigation has led the Armour Institute of Technology to offer instruction in the more important branches of this subject. The object of the course is to prepare students for experimental and practical work in aeronautics.

The elements of what is known of the scientific principles upon which the art of flying is based are taught. Students are made acquainted with the work and results of the principal experimenters; and also with the methods of construction now used in successful air ships and aeroplanes, including motors. These courses are elective and open to Juniors and Seniors of all departments.

The subjects of instruction are:

AERODYNAMICS.

The work in this subject includes the study of fluid resistance, stream line forms, the economics of flight, the theory and efficiency of the screw propeller, and experimental aerodynamics. Published accounts of experiments, including the latest available, are drawn upon for data on which to base mathematical studies of the problems of flight.

Text-book: Lancaster, *Aerial Flight, Vol. I. Aerodynamics*, supplemented with lectures.

Two hours per week during the second semester of the Junior year.

AERONAUTICAL DESIGNING.

The studies include the stresses in the principal types of balloons, air ships, and aeroplanes now in use; and the designing and detailing of these structures.

Lectures with problems assigned for solution by the students.

Two hours per week during the first semester of the Senior year.

GAS ENGINES.

Elementary theory, construction, and practical working of light weight gas engines.

Two hours per week during the second semester of the Senior year.

Death of A. L. Pfitzner.

A. L. Pfitzner, who was employed by G. H. Curtiss to design the present 4-cylinder Curtiss engine, then building and flying a monoplane of his own and later experimenting with the Burgess aeroplane at Marblehead, Mass., on July 12, went out in a boat and shot himself, falling into the water. The boat was found adrift. In it was his hat and coat and a note asking the finder of the boat to return it to its owner. The reason for his act is thought to be despondency. His loss is keenly felt by all those who knew him.

Mr. Pfitzner had been fairly successful in flying the Burgess aeroplane, and had made numerous flights on his own machine, as recorded in AERONAUTICS. On July 9 he made a flight of about 3 miles. When directly over the river at Plum Island, where all of the flights are being made with the Burgess machine, a gust of wind hit the machine and both the aviator and the aeroplane landed in the water.

On July 8 he made a flight of a couple of miles and then landed, due to the overheating of the engine.

Meets Death in Glider.

Eugene R. Speyer, of San Francisco, Calif., a young lad student, who with his "pal," Carlton Gray, had built a biplane glider, was killed on June 1 during his first experience at gliding, while towed by an automobile. Evidently frightened by the speed and a contrary gust of wind, he turned his front rudder down and the machine hit the ground and turned a somersault, breaking the boy's ribs and resulting in his death a few minutes later in the hospital. Speyer was quite insistent on being the first to try the machine and would not even toss a coin for choice.

The Wright Suits.

New York, July 1. The U. S. Circuit Court of Appeals yesterday denied the motion on behalf of the Wright Company asking that the Curtiss concern put up a bond to protect the petitioner from loss in the event of winning the patent suit. The petition sets forth the loss being done the Wright Company by the flights of Curtiss and Hamilton and others using Curtiss machines. In the last issue the dissolution of the injunction against Paulhan and Curtiss was announced.

The suit against Saulnier has been dropped as he left the country. Pressure of work that has seemed more important has prevented suits being brought against Harmon and other alleged infringers but the matter is not being held open awaiting final decision on the original suits. The Wright Company in the near future will proceed against every infringer who is injuring its business.

The Wright Co. has filed a demurrer to the action brought by Charles Lamson alleging infringement, stating that the bill of complaint does not show whether the infringement was committed by the defendants jointly or severally, and that it does not aver execution of the letters patent according to law.

WRIGHTS MADE DOCTORS OF LAW.

Oberlin College has conferred upon Orville and Wilbur Wright the degree of Doctor of Laws.

Balloon Races Off.

The balloon race scheduled at Peoria, July 5-6, was called off. A storm upset the plans for the St. Louis race on June 6-7 and the balloons had to be deflated to save them.

Octave Chanute, who was taken ill in Paris last month, is reported in a cablegram to his son, C. D. Chanute, No. 6047 Jefferson Ave., Chicago, to be better. The message says: "No cause for alarm."

CLASSIFIED ADVERTISING

TYPEWRITERS.—All makes. Caligraphs $6.00; Hammond, Densmore $10.00; Remington $12.00; Oliver $24.00; Underwood $30.00. 15 days' free trial and year's guarantee. Harlem Typewriter Exchange, Dept. F 18, 217 West 125th St., New York City.

AEROPLANE—Position wanted by woodworker and mechanic experienced in aeroplane and gas engine work. DAVIS, care of AERONAUTICS.

NO INFRINGEMENT—I am patenting design of aeroplanes, with no vertical rudder, which does not conflict with Wright patent. Need moderate capital to build. EXPERIENCED, care of AERONAUTICS.

BALLOON FOR SALE—New, 35,000-ft. balloon in fine shape. Full equipment and instruments. Cost $750. What will you pay or trade? EUGENE BROWN, Peoria, Ill.

FARMAN AEROPLANE—For sale cheap. The identical Farman aeroplane which won endurance prize at Rheims, France, for flight of over three hours. New power plant. J. W. CURZON, Hawthorne Aerodrome, Hawthorne, Ill.

THE "WHITE ROTARY" ENGINE WILL MAKE YOUR MODEL FLY. WRITE ABOUT IT. MINIATURE AEROPLANE WHEELS, RUBBER TIRED, VERY STRONG AND EXTRA LIGHT. SUPPLIES FOR YOUR MODEL. WHITE AEROPLANE CO., 15 Myrtle Ave., Brooklyn, N. Y.

FOR SALE—One 110,000 cubic foot balloon, holder of world's speed record. Also one 40,000 cubic foot balloon complete. Make offer. C. A. Coey, 1710 Indiana avenue, Chicago.

WANTED.—Capital to develop or construct "Man-Carrying Aeroplane," entirely original invention on new scientific principles. Patents granted in all civilized countries on miniature models which will be sent to interested parties for the price of one dollar. No other miniature flying machine stands comparison in its simplicity and stability of construction and wonderful action. Will fly under any condition of wind. For further information write E. EICHENFELD, No. 11 South 7th St., Minneapolis, Minn.

MECHANICAL ENGINEER wishes position as charge over aeroplane building; has 7 years' experience in aeroplanes, motors and experimental work. Address M. E., c. o. AERONAUTICS.

Having developed a totally new device for automatically balancing and steering aerial crafts, I wish to co-operate with a party, willing to furnish a few hundred dollars for building and demonstrating the same in a flying craft of any make.

This apparatus embodies principles and features of the highest importance and value, and will become fundamental and indispensable to aerial navigation.

Leading features of the apparatus:

Size 10 in. x 10 in. x 20 in. balances the largest craft, be it Wright, Curtiss, Bleriot, any dirigible, etc.

Possesses a positive, *non-oscillatable*, vertical (fundamental requirement) controller at all times that is perfect, and will never and can never be radically changed or improved upon.

Balances flying machines with their planes in tilted, warped, ascending, descending positions with utmost accuracy.

All steering mechanism combined in one hand wheel.

Flying in horizontal, ascending, descending, directions, circular, spiral curves of any radius by predetermined action on this one hand-wheel without ever interrupting the automatic balancing operations.

Patents applied for in several countries. An early demonstration of this invention, presented here without exaggeration, is the principal motive for advertising it. Address:

G. GAWLET,
2318 Sixth Ave., Seattle, Wash.

(*Continued on page 75*)

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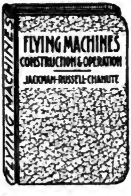


Flying Machines: Construction and Operation, is a new book announced by the Charles C. Thompson Co., of Chicago. It will be ready for distribution June 1. The authors are W. J. Jackman and Thos. H. Russell, both well known as writers on mechanical topics. Octave Chanute, C. E., a recognized authority on aviation, contributes a chapter on "Evolution of the Two Surface Flying Machine," which will undoubtedly be of interest and benefit.

While many valuable works on aviation are in circulation, the preliminary announcement of "Flying Machines: Construction and Operation," makes plain the fact that this is something different. In the words of the publishers it is a "show how" book for novices who wish to construct and operate flying machines. With this purpose in view it is strictly non-technical and easy to understand.

For sale by AERONAUTICS at $1.50 in leather; $1.00 in cloth.

Les Aeroplanes de 1910 by R. de Gaston, secretary of the French Society of Aerial Navigation. Preface by M. J. Armengaud, and a study on propellers by M. V. Tatin. Librarie Aeronautique, 32 rue Madame, Paris. Price 4 fr.

A technical study of the principal aeroplanes of 1910, usually showing drawings, which gives in brief space very complete data, figures, scales and comparative tables. This is a work of real value to the experimenter and to the student of aviation.

The Sky-Man is the title of a new and absorbing book just brought out by The Century Co., New York. A pleasure yacht goes up into the wilds of the frozen North, searching for some signs of a lost vessel which contains an Arctic explorer and his party. On board the yacht is a young girl, Jeanne Fielding, the daughter of that explorer. Up into the same region of the North comes a young man, Philip Cayley, who has long been an outcast from civilization, because of a crime of which he was not really guilty. He has taught himself to fly with a pair of giant wings whose motive force is the muscular power of his own body. Wild chance and a quick succession of stirring adventures leave the "sky-man" and the young girl alone to fight privation and darkness through an Arctic winter. Of course, there is a villain in the case, a half insane Norwegian sailor, whose stealthy appearances make life miserable for Philip and Jeanne.

It is a book which appeals to the imagination—a story not sociological nor with a problem in it, but of the kind of adventure that one finds in "Robinson Crusoe" and "Treasure Island." For sale by AERONAUTICS at $1.30.

The Epitome of the Aeronautical Annual. Mr. James Means, who published the "Aeronautical Annual," in 1895, 1896 and 1897, has completed an epitome of these volumes, all three numbers of the Annual being now out of print. Mr. Means' Annuals have been of great value to experimenters but are not so well known to present-day enthusiasts. A vast amount of good information will be obtained from this book. The principal articles of the three previous volumes are incorporated in the epitome, with several new ones. The article by Octave Chanute on "Soaring Flight," printed in AERONAUTICS for April, 1909, has been substituted for Mr. Chanute's two previous articles in the Annuals. Prof. A. Lawrence Rotch has written a chapter on the relation of the wind to aerial navigation, and the history of the Blue Hill Observatory is given up to date. For sale by AERONAUTICS at $1.12.

The Art of Aviation, by R. W. A. Brewer, a "Handbook upon Aeroplanes and their Engines," with notes upon propellers, 8vo., cloth, 253 pp. fully illustrated with 12 large plates. This is a very practical book and will be of value to anyone who can make use of higher mathematics, although the theoretical is done away with. The tables of weights lifted at various angles, wind pressures, etc., will be found of value. Contents include: Comparison of Monoplanes and Biplanes; Form, Support, Stability, Weight and Horse Power; Herson's Machine; Engine Problems (This is quite exhaustive); Descriptions of Engines (Many engines are described in detail); Propellers, Relation between Pitch Speed, Thrust and H. P.; Efficiency of Propellers by Various Methods, Tables; Materials of Construction; Details of Manufacture; Successful Monoplanes; Biplanes; Wright and Voisin Compared, Tables of Leading Machines; Progressive Records; Art of Flying, Gliding, etc. Price, $3.50, from AERONAUTICS.

How to Build an Aeroplane. This is a new book translated from the French of Robert Petit by T. O'B. Hubbard and J. H. Ledeboer. The author, who is an eminent French engineer, has made a personal study of the method of adopting by various European manufacturers, and has tried to incorporate in the book such knowledge of methods adopted by constructors as will be of benefit to those building.

The contents include: General Principles of Aeroplane Design; Theory and Calculation (Resistance, Lift, Power, Calculations for the Design of an Aeroplane, Application of Power, Design of Propeller, Arrangement of Surfaces, Stability, Center of Gravity, etc.); Materials; Construction of Propellers; Arrangement for Starting and Landing; Controls; Placing Motor, etc.; The Planes (Curvature, etc.); Motors.

Le Constructeur de Petits Aeroplanes, par M. R. Petit. A large pamphlet containing working plans of four small easily flown aeroplane models with complete directions for their construction. Published at 30 cents by Librarie Aeronautique, 32 rue Madame, Paris.

L'Aeroplane de l'Avenir, par Henri Picq. A brochure with drawings and plans of a freak aerial omnibus. Price 30 cents, at Librarie Aeronautique, 32 rue Madame, Paris.

The *Art of Flying*, by Thomas Walker, is the third of the series of classics being published serially by the British Aeronautical Society. This may be had from King, Sell & Olding, 27 Chancery Lane, London, England, at 30 cents.

The
Wright Company
Dayton, Ohio

Sole Makers
and Exhibitors
of the Famous

WRIGHT
FLYERS

¶ Both 'planes
and motors
built entirely in
our own factory

THE WRIGHT COMPANY

Lighter Gas for Balloons.

A new German invention of value for free balloons is reported by Consul Thomas H. Norton of Chemnitz:

Illuminating gas is forced through long tubes, maintained at a very high temperature. Most of the carbon in the hydrocarbons is thus separated out and the percentage of hydrogen is largely increased, so that this gas constitutes 80 per cent of the modified coal gas. At the same time it is deprived almost entirely of its characteristic odor, and freed from the presence of benzine, which exerts an undesirable solvent action upon the materials employed to render balloons impermeable. The most important change is that in buoyancy, as the specific gravity sinks from 0.44 to 0.225, or less than one-quarter the weight of air. This means that 1 cubic meter of the new gas can support a weight of 1 kilo (2.2 pounds). In coal gas, 1 cubic meter supports 0.7 kilo. A balloon with a capacity of 7,000 cu. ft., when inflated with the new gas, has a lifting power equal to that of a balloon of 10,000 cu. ft. charged with ordinary coal gas.

Wellman in the Air Again.

It has been announced that Walter Wellman and Melville Vaniman, who have made a number of attempts to reach the pole by airship without success, are now planning to sail from Europe to the States in the same ship, "America," used in previous expeditions. The London *Telegraph* and the New York *Times* are exploiting the attempt, agreeing to purchase all the news which Mr. Wellman can produce.

The Buyers' Guide

Trade Notes

TO OUR FRIENDS.—We would appreciate it very much if you would specify in writing advertisers that you saw the ad. in AERONAUTICS. This will help us, and eventually be of equal service to yourselves.

The Call Aviation Engine.

A decided refinement in aeronautic engine construction is that adopted by the Aerial Navigation Co. of America, with headquarters at Girard, Kans., in the Call aviation engine.

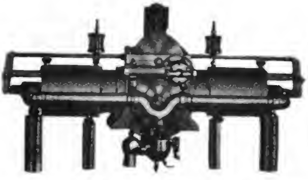
This is a regular opposed two and four cylinder engine of the usual four-cycle type, water cooled, 6-in. bore by 5¼-in. stroke; the two-cylinder engine developing 50 horsepower and the four-cylinder engine developing 100 horsepower at 1,900 revolutions per minute.

It is in the cylinder and cylinder head construction that the chief point of interest lies.

Even with the usual copper or other sheet metal water jacket, adopted by most aeronautic engine manufacturers to lighten the weight of iron cylinders, the great weight of cast iron either compels an unduly thin cylinder in order to keep down the weight, or, in case the cylinder walls are made of the requisite thickness for strength, the engine becomes very heavy.

On the other hand, the employment of steel for cylinders, as has been attempted by certain manufacturers, both in this country and Europe, has not, to say the least, met with signal success. Whether from the extreme thinness of the cylinder walls or to steel being less satisfactory in its bearing qualities than gray iron, engines of this construction, while giving satisfactory short runs, have failed in endurance tests.

In the Call engine the cylinder walls, piston heads, valve cages, valve seats, as also all other parts exposed to the heat of explosion chamber, are constructed of a special high-grade vanadium gray iron, while the outer cylinders and cylinder heads, comprising also the water jacket, are constructed of a special high-grade alloy of aluminum and magnesium called magnalium.



Unlike other constructions in which the use of an outer cylinder of lighter metal with an inner cylinder or bushing of gray iron has been attempted, it will be observed from the accompanying illustrations, first, that the iron inner bushing is surrounded throughout its entire explosion chamber length by the jacket water, without any intervening metal or joints, and, second, that no part of the lighter metal of which the outer cylinder and cylinder heads are composed is exposed to the heat of explosion chamber.

With proper water circulation, all danger of the overheating of the outer cylinders is thus avoided, and the proper adjustment maintained between the relative heat conductivity and expansive qualities of the two metals.

The gray iron bushings are machined to a perfect fit both inside and out, and are then pressed into the outer cylinder from the top. These bushings are of ample thickness throughout the length of explosion chamber, and below that are considerably reduced in thickness. As will be seen from the accompanying illustrations, an additional shoulder upon the inner cylinder at the top is machined to fit into a companion groove in the magnalium cylinder in order to make a thoroughly water-tight connection, while the spiral partitions of the magnalium water jacket extend inward to the iron cylinder, greatly strengthening it to resist the explosive stress encountered.

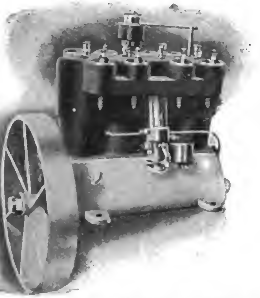
By the use of this lighter metal for the main outer cylinder, enormous strength of construction is permitted without undue weight. The magnalium cylinders are, in fact, of sufficient thickness to give a tensile strength of something like 150,000 lbs., while the cylinder base and cylinder heads are each secured by a dozen steel studs or cap screws ⅜ in. in thickness, having a combined tensile strength of 150,000 lbs.

In order to further lighten the engine, the valve cages, which are also of vanadium gray iron in one piece, are air cooled above the level of the cylinder heads; while below this and around the valve seats they are most efficiently water cooled. The crankcase and fittings not exposed to the heat of explosion chamber are also made of magnalium, similar to the material used for outer cylinders and cylinder heads, and the crankcase is thoroughly braced and ribbed in such a way as to give enormous strength combined with minimum weight.

Having thus secured lightness in the heavier engine parts, there has been no attempt made upon the part of the designer to secure lightness by the use of freakish material and insufficient sizes

Detroit Aeronautic Construction Co.

Builders of Light Weight, High - Power
MOTORS, PROPELLERS and RADIATORS



OUR motors combining compactness, simplicity and power, are the result of twenty years of practical gas engine construction. A card will bring our circular with full description.

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Four Cylinder 4½ x 4½ in. 30 to 40 H.P., complete with radiator and 6-ft. x 3½ ft.-pitch propeller. **$650** Weight per outfit 175 lbs.	Four cylinder 5x5 in., 40 to 50 H.P., complete with radiator and 7-ft.x4-ft.-pitch propeller **$750** Wgt. per outfit 200 lbs.	Six cylinder 5x5 in., 60 to 70 H.P., complete with radiator and 8-ft.x4-ft.-pitch propeller **$950** Wgt. per outfit 240 lbs.

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Special Notice!

WE have received so many inquiries for agency propositions and orders are coming in so fast, that our mail has grown to such an extent, that we find ourselves unable to keep up with our correspondence, but will fill orders and answer all letters as quickly as possible until we have increased our facilities still further.

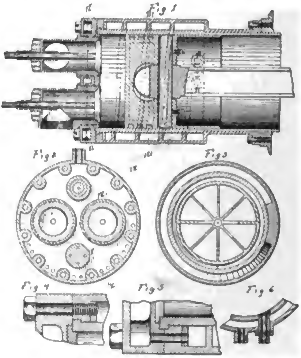
Price List of Models and Parts is now ready, but it will be some little time before our Supply Catalog for Full Size Machines is ready for distribution as there are so many new things to list. In asking for catalog, please state which one you want.

CHURCH AEROPLANE CO.
Main office and factory
125 South St.,
BROOKLYN, : : N. Y.
Chicago office, 49 Wabash Ave., H. S. Renton, Manager.

in the construction of piston heads, connecting rods, crankshaft and other like parts. The piston heads and rings are also made of vanadium gray iron. The connecting rods are the best grade of vanadium phosphor bronze, specially designed for strength, and the crankshaft is of the best grade of vanadium steel, solid throughout.

The valves are of large size and have unusually large valve lifts. Both the inlet and exhaust valves are 2 in. in diameter, and the valve lift is ⅝ in., giving free clearance. In addition to the main exhaust valves, a ¾-in. (inside diameter) auxiliary exhaust port, thoroughly water cooled, is placed on the bottom side of each cylinder. This exhaust port is allowed to open somewhat in advance of the main port, and thus draws the fire, furnishing an additional safeguard against the overheating of the main exhaust valve seats and bearings.

Both the main and exhaust ports are silenced, not by means of the usual baffle and muffler plates, which crowd the exhaust back into the explosion chamber, but by a special silencer constructed of an inner casing of steel tubing, with V slotted mouth, over which an outer casing of aluminum tubing of considerably larger proportions is then fitted by means of a vanadium gray iron ring or thimble containing a large number of holes around its entire circumference. The force of the exhaust pumps the cold air through these openings, and by this means the gases are so cooled and shrunk by the time they reach the mouth of the silencer as to greatly diminish the deafening noise so pronounced a feature of other aviation motors.



ENGINE DETAILS.

Fig. 1 is a central horizontal section of the cylinder and piston of engine. Fig. 2 is a vertical section taken on the line II-II of Fig. 1. Fig. 3 is a vertical section taken on the line III-III of Fig. 1. Fig. 4 is an enlarged section at the outer end of the cylinder on the line IV-IV of Fig. 2. Fig. 5 is a similar view on the line V-V of Fig. 2. Fig. 6 is a vertical section of a part of the cylinder on the line VI-VI of Fig. 1.

Especial attention has been devoted to securing the greatest possible cooling facilities. To this end the water jacket partitions are spirally arranged in such a manner that the jacket water passes four times around the cylinders during each circuit, and then over the entire surface of the cylinder heads. In addition to this, the engine is also equipped with a piston circulation pump instead of the usual centrifugal or gear pump adopted on automobiles, and copied by other aviation engine manufacturers. This piston pump is positive in its action, and in connection with the spiral cooling flanges forces the jacket water four times around the cylinders during each 15 seconds.

While the manufacturers of this engine have endeavored to put upon the market a moderate priced engine, they have spared no pains and expense to make the engine of the very best quality, both in the character of its workmanship and finish. All the exposed parts of the engine not constructed of magnalium—a shining non-corrodible metal—are nickel plated, and the whole engine is polished to a mirror finish. The demand has been so large that the manufacturers have been compelled to increase their shop and foundry facilities from time to time, until they are prepared to supply the engine on short notice and in any numbers. The prices of the above engines are $1,000 for the 50 h. p. and $1,700 for the 100 h. p. respectively. These prices include all accessories, such as carburetor, pump, ignition and radiator facilities.

Two Spark Plugs to a Cylinder.

Messrs. Unterberg & Helmle, who make the famous U. & H. Master magnetos, have developed a new type of magneto, which meets with every requirement of speed service. In this new U. & H. racing magneto, two armatures are employed mounted tandem, and running in the same armature tunnel on one shaft. These armatures are fitted with two complete sets of windings, each set consisting of a primary and secondary winding. The most unusual feature of the magneto lies in the fact that but one interrupter is employed to break the primary circuit of both armature windings, and it is obvious that this arrangement must produce the high tension current in each armature winding, and must produce these two impulses at precisely the same instant.

TWO PLUGS FOR EACH CYLINDER.

The magneto is equipped with a compound distributor, each armature winding being connected by conventional means with the distributor. One set of plugs is connected with one distributor, and the other set of plugs, of course, connects with the other distributor. Two safety spark gaps are provided, one for each high-tension circuit, so as to eliminate any danger of damaging the windings, should the cables, leading to the plugs, be accidentally damaged.

As will be seen, the above unique arrangement overcomes all objections heretofore found in the use of two magnetos on racing motors. It is immaterial as to the amount of wear which takes place in the driving mechanism, or the amount of wear on the interrupter mechanism of the magneto, as the one break of the magneto interrupter operates for both windings. It is impossible to derange the magneto so that one set of plugs will receive the electric impulse before the other does, and tests made abroad with this new type of mag-

TO THE PROMOTERS OF THE
Coming Aeroplane Meets

YOU want exhibitions of Man-Lifting Aeroplane Kite Flying to interest the crowds while the aviators are not flying.

¶ High or even moderate winds will invariably keep the aeroplanists from flying until late each afternoon. Before then we will fill the air with hundreds of 9- and 12-foot Aeroplane Kites of every known kind. By flying these, dozens in tandem, enormous American flags, streamers and announcement banners about the meet can be lifted a half mile in the air.

¶ These scientific kites will fly all day and the displays will be a great attraction in themselves and will keep the crowds quiet and contented, when for any reason the aeroplanes cannot fly.

¶ At the Meet of the West Hudson Aero Club at Arlington, N. J., June, 1909, New York papers said, "The hundreds of kites in the air were a decided feature."

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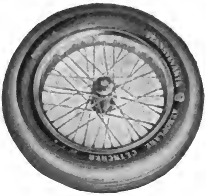

Clincher type only, which is the lightest and most satisfactory type for aeroplanes

SIZE	Weight complete
20x4 in.	6¼ lbs.
26x2½ "	6½ "
28x2½ "	7½ "
28x3 "	8 "
28x3½ "	8¾ "

Wheels also furnished for the above sizes

Pennsylvania Rubber Co., Jeannette, Pa.

BRANCHES:
New York—1741 Broadway; Boston—167 Oliver Street; Chicago—1241 Michigan Avenue; San Francisco—512 Mission Street: Los Angeles—930 So. Main Street.

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GUSTAVE WHITEHEAD

No Bursting Cylinders—No Cams—No Springs or Valves to Work Loose

Construction of the utmost simplicity
Vibration negligible

Absolutely Nothing to get Out of Order

4 Cylinders (vertical), 8 port exhaust, 2 cycle

75 H.P. 200 lbs. Price $1,400
40 " 145 " " $1,150
25 " 95 " " $950

Including Bosch Magneto—30-day deliveries

GEORGE A. LAWRENCE, Mgr.,
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This motor has been exclusively adopted by C. & A. Wittemann, Aeroplane Manufacturers

neto show conclusively that the principle of operation of this new U. & H. Master Magneto is correct, and that while it is possible to secure fairly satisfactory results by connecting two separate magnetos to the motor, the use of the U. & H. racing magneto assures the maximum efficiency of the motor at all times, owing to the fact that it is impossible for the sparks in any cylinder to occur out of synchronism.

Aside from the principal features outlined above, the magneto is of the well-known U. & H. construction, employing the U. & H. non-adjustable interrupter, which is another detail of great interest to racing men, as it eliminates all possible chance of ignition difficulties, due to breaking or sticking of the pivots, springs, insulation, and other parts used on other types of interrupters. The armature and distributor of the machine are mounted on annular ball bearings, which effectually eliminates any possibility of trouble, due to lack of oil.

Buffalo Pitts Co. Building Aeroplane.

The Buffalo Pitts Company of Buffalo, N. Y., who are large engine builders, have under construction an aeroplane. In the course of their experiments with this machine over a number of years, they had occasion to try out certain models demonstrating new aerodynamic principles, and one of these models created so much interest in its operation, that they decided to make a flying toy novelty of it, which they have done, giving it the name of "Hi-Flyer" helicoptic flying machine, patented and copyrighted.

This little machine flies to a height of over 600 feet, and can be operated by any child. Shooting the "Hi-Flyer" is as much fun for grown people as for children, and is an excuse for outdoor exercise for everybody. It has been the sensation of the aviation meets throughout the country. It is used by aviators for determining the direction and velocity of the wind at high altitudes, and there is a special demand for it for this purpose at aero clubs, as well as for use on golf courses, and at amusement parks and beaches.

Kites Now Feature of Meets.

The kites of Samuel F. Perkins were a continual source of amusement and interest during the Indianapolis, Montreal and Toronto meets. These flew all the time and provided the public with something to look at when the 'planes did not fly. One Montreal newspaper featured an announcement of the kites on its news bulletins, illustrating the surprising value kites are lending to meets. These kites are sent up on many lines, singly, in tandem and other ways, and carry various banners, streamers and flags, advertising either the meet or articles of general use. If there is not enough wind for kites small balloons take the place of the kites and perform the same usefulness. The regular outfit numbers 100 kites of all kinds. A new stunt is a huge box kite made like an aeroplane, with rudders and propeller. In the air it looks exactly like the real thing and remains stationary in the air. In this it has it over its original.

Rinek Aero Mfg. Co.

The Rinek Aero Manufacturing Company of Easton, Pa., was recently incorporated with C. Norvin Rinek president and Frank Buckman, secretary-treasurer to conduct the light motor and aeroplane business heretofore handled by the machine department of the Easton Cordage Company. It was felt that on account of the rapidly increasing business handled by the machine department that a greater volume could be more efficiently handled by an organization devoted solely to aeronautics. The Rinek engine has found favor through consistent performance and good workmanship and material. Philip W. Wilcox, who has built a Farman-type machine at Mineola, speaks highly of the motor and the company's treatment of him.

Catalogues Wanted.

Manufacturers are requested to send catalogues of motors, propellers and accessories to Miguel Lebrija, Ave. del Palacio Legislative No. 42, Mexico, D. F., Mexico.

J. W. Curzon Starts Aero School.

J. W. Curzon who brought the first Farman aeroplane into this country and has made flights with it at the Indianapolis motor speedway, has established a training school where would-be aviators build actual machines. Those who want to learn to fly only will be accommodated at the Hawthorne racetrack, Chicago, where he has associated himself with M. L. Kasmar, author of "First Lessons in Aeronautics." An effort will be made to furnish graduates of the school with positions as aviators. Owners of machines will also be taught to fly them.

Three machines will be put out by the manufacturing end of the concern, all to be non-infringing and equipped with Elbridge engines. These are:

Curzon No. 1, small biplane, main planes 28 by 5 ft.; box kite elevator, size 6 ft. by 2 ft. each; single-plane stabilizer with slight camber; 17½ sq. ft. of surface; Curtiss type chassis and rudder.

Curzon No. 2, main planes 32 ft. by 6 ft., single-plane stabilizer with 18 sq. ft. of surface, single-plane elevator in front, 15 sq. ft.

Curzon monoplane, main plane 35 ft. by 7 ft. Chassis similar to Farman; aspect same as Farman, but with bottom plane entirely removed with exception of middle section, which is made much narrower, and is lowered down so that the driver sits immediately above the wheels with engine at his back and propeller far above the engine, chain driven, thus placing man and motor far below the main lifting surface, which is 12½ ft. high, in order to maintain stability in all kinds of weather. Single-plane stabilizer behind as well as horizontal rudder in front, 15 and 18 sq. ft. respectively.

About Hartford Tires.

While to many people it may seem strange that a flying machine is equipped with tires, nevertheless in almost all cases this is true. The Curtiss machine used by Charles K. Hamilton in his flight in New Britain is fitted with three Hartford aviator tires 20 in. by 2 in. in size.

Hartford tires have been used since the first days of the bicycle, and have kept abreast of the procession of new inventions, and when the aeroplane became popular and tires were found a requisite part of their equipment, the Hartford Rubber Co. had three styles of tires to offer. At the first aerial show held in Madison Square Garden the Hartford company was the only tire exhibitor, showing at that time its aviator, aeroplane and aeronaut tires.

These tires are pneumatics, mostly in small sizes and of special construction to afford all the resiliency possible, as this is necessary to aid the machine in starting from the ground—and yet the tread must be very durable and of a certain degree of toughness to withstand contact with obstacles which may come in the path of the aeroplane.

There are already in this country more than a hundred flying machines fitted with Hartford tires. Recently a good-sized shipment was made to the Curtiss factory.

Shaffer Supply Co. Absorbed.

The Shaffer Aero Manufacturing and Supply Co. of San Francisco has been absorbed by the California Aero Manufacturing and Supply Co. Roy Scott, a well-known automobile man of San Francisco, is now a partner in the rapidly growing business.

The new salesroom, factory and office at 441 and 443 Golden Gate Ave. is already a headquarters for the aeronautically inclined on the Pacific Coast.

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HOLMES
ROTARY
MOTOR
7 Cylinder
30-35 H. P.
70-80 H. P.
3 lbs. per H. P.

Superior to any Aviation Motor built in this or any other country.

A. D. Mackay
General Sales Agent
First National Bank Bldg.
CHICAGO

Roebling Aviator Cord
Made of the highest strength
wire drawn from special steel
The strongest and lightest cord procurable
JOHN A. ROEBLING'S SONS CO., - Trenton, N. J.

They report a large demand for their laminated ribs, which are carried in stock and made to order, the four-ply 5-ft., 5-ft. 6-in. and 6-ft. 6-in. lengths being favorites. They are now filling an order for ribs of the exceptional size of 8 ft. 6 in.

The 20-in. aero wheel made by this company is replacing a number that have "dished" its 7-in. hub, steel rims and heavy spokes, making it practically unbreakable. Regularly equipped with ball bearings. Friction bearings on order.

They are now placing on the market a knock-down plane, or rather a biplane, carrying surfaces 30 ft. by 5½ ft. The outfit includes laminated main beams and ribs, struts, sockets, joints and rib connections, to which can be attached any sort of rudders and chassis, one of the three types made by this company, or by the buyer.

Mr. Cleve T. Shaffer, whose technical descriptions AERONAUTICS' readers are familiar with, will be consulting aeronautic expert for the firm.

The following agencies have been secured: Whitehead motors, Detroit 20-30 motor, Palmer & Goodyear aero tires, Bosch magnetos.

Elbridge Engines Improve.

Mr. A. P. Warner of Beloit, Wis., the first amateur to fly in this country with a Curtiss machine, has announced his intention of building a new machine after ideas of his own during this summer. He expects to equip it with an Elbridge "featherweight" engine.

Very rapid advancement is being made in the design and construction of the Elbridge "featherweight" engines. Fundamentally the engines remain the same, but drop forged steel connecting rods, new pistons and a more efficient system of manifolds have improved the engines in both appearance and efficiency. The engines now being turned out at the rate of one each day are said to deliver 15 to 20 per cent. more than rated power. Regular deliveries are now being made in 10 days after receipt of orders.

Willis Co. Removes.

The E. J. Willis Co., dealers in aero supplies, has removed to larger quarters at 85 Chambers St., New York.

Harmon Uses Pennsylvania Tires.

One of the Herreshoff brothers is building an aeroplane and is equipping it with the large diameter Pennsylvania aeroplane tires. The Pennsylvania Rubber Co. has supplied Clifford B. Harmon with rubber to renew the shock absorbers on his Farman, which is already equipped with Pennsylvania tires.

The Pennsylvania Rubber Co., whose works and main office are located at Jeannette, Pa., and who are now giving employment to nearly 1,000 people, have recently put on the market an aeroplane tire peculiarly suitable to the advanced stage of aeroplane development.

Heretofore motorcycle tires of 2½ in. and 3 in. section have been largely used on aeroplanes. Such tires are not designed or adapted to stand the shocks of alighting and have little cushioning effect. It is therefore often necessary to use four wheels on an aeroplane, resulting in a considerable increase in weight and air resistance.

The Pennsylvania aeroplane tire is 20 by 4 in. in size and is of light but strong construction. Two of these tires will carry a ten or twelve hundred pound flyer, and will have sufficient cushioning effect to prevent the jar of alighting being transmitted to its delicate framework.

This tire is similar to the Pennsylvania clincher automobile tire, but constructed with a view to its use on aeroplanes.

The 20 in. by 4 in. tire complete with tube weighs only seven pounds. For lighter machines they are turning out a 2½-in. tire in both 26-in. and 28-in. diameter of the same light and strong construction which may be employed where the use of a wheel of a larger diameter seems to be advisable.

Requa-Gibson Propeller Holds Record.

Clifford B. Harmon, who holds the United States amateur endurance record with his Farman, recently had the machine fitted with a Requa-Gibson regular type propeller, 8½ ft. diameter by 2-ft. pitch. Referring to its performance, Mr. Harmon writes: "With this propeller I broke the amateur record of America of 1 hour 5 minutes. It seems to be giving entire satisfaction."

With this propeller and the engine running at 1,200 r. p. m., the pitch speed figures 2,400 ft. per minute. Now, the aeroplane flies at 40 miles per hour, or 3,520 ft. per minute, which is considerably more than the pitch speed of the propeller. Patrick Y. Alexander experimented with model propellers on a wire on board the steamer traveling between England and America, and found that these advanced into the wind. The Requa-Gibson company promises some startling information in the near future, as the result of present investigations.

Club News

The **Lincoln Aero Club** is the name of a new body just organized for the purpose of discussing aerial navigation and promoting the sport in Lincoln, Neb. The six charter members are Dr. G. R. Brownfield, Joe Burnham, Commandant H. E. Yates of the University cadet battalion, G. W. Chowins, superintendent of grounds and buildings at the university; E. C. Babcock, and Dean Richards of the department of engineering at the university. As soon as possible club grounds are to be established somewhere on the outskirts of the city where the necessary sheds and other equipment will be erected, and test flights will be made.

Dr. Brownfield is working on a 4-ft. model for a double bi-plane on which he has applied for a patent. He is to have two pairs of planes, one pair directly ahead of the other. His machine, according to the model, he has constructed, is to have at least two advantages over the Curtiss and Wright machines. Both of these operate in preserving the equilibrium of the machine. One is a controller operated by the engine and the other is a pair of wings lying on a horizontal plane on either side of the machine. These are operated by means of a lever. If the machine should dip to the left, for example, the left wing being thrown out to offer resistance in the atmosphere, while the right wing is raised to relieve resistance.

Dr. Brownfield, of 1234 "O" St., is enthusiastic and has arranged for the club to visit the Omaha meet in a body.

McGill Aviation Club has been formed by students at McGill University, Montreal, Can.

The **Aero Club of Colorado** is requested to inform us of its address. A letter addressed to the club at 30 W. Colfax Ave., Denver, has been returned by the Post Office.

The **Aero Club of Philadelphia,** which has existed in name only for more than two years, has been dissolved. Some of its members have joined the Pennsylvania Aero Club.

It was also announced that Clarence P. Wynne, treasurer of the old club, had been elected secretary of the Pennsylvania Club, Henry S. Gratz, president of the old club, had been elected vice-president of the Pennsylvania club, and Arthur T. Atherholt, secretary of the old club, had been made president of the new club.

A **Boys' Aero Club** has been formed at the Omaha, Neb., Y. M. C. A. Sergeant C. F. Adams, of the signal corps at Ft. Omaha, gave the new club its first lecture.

The **Aero Club of California** held its election of officers on the 28th of June. The following officers were elected for the ensuing year: Presiden, H. LaV. Twining; 1st Vice-President, R. I. Blakeslee; 2nd Vice-President, W. H. Leonard; Secretary, Buel H. Green; Treasurer, Chas. E. Rilliet; members of Board of Directors at large, W. S. Eaton and Van M. Griffith.

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Agents—Whitehead Motors, Detroit Motors, Palmer & Goodyear Aero Tires, Bosch Magnetos "Aeronautics"

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Perfect Propellers

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FOR AERONAUTICAL PURPOSES
We Accomplish Results where Others Fail
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The **South Bend (Ind.) Aero Club** has been formed with the following officers: President, Colonel Jasper E. Brady; vice-president, George Cutter; secretary, B. S. Walters; treasurer, Elmer R. Stoll.

The **Aeronautical Society** offered a prize for the most helpful essay. Seven members prepared papers and all were read on one of the regular meetings. The prize was awarded by popular vote to Laurence Lesh. On July 14th Charles H. Inman addressed the society on the subject, "Proving the Horsepower of Engines by Reaction Test." Mr. Inman's talk was most interesting. His device is intended to be capable of use on an aeroplane to show the aviator at all times just what horsepower his motor is delivering and what his propellers are doing. This paper will be printed in AERONAUTICS.

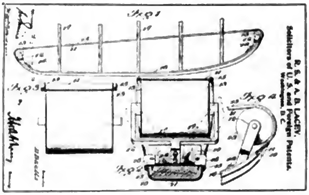
Exchange and :: :: Forum :: ::

STARTING DEVICE FOR SALE.

D. D. Wells, R. F. D. 2, Jacksonville, Fla., has recently taken out a patent covering a skid to assist starting on rough ground without employing any track.

In the sketch, Fig. 1 is a side view, Fig. 2 shows a transverse section of same, Fig. 3 is a detailed end view of one of the pulleys with the belt applied thereto and Fig. 4 is a detail side elevation of one extremity of the skid.

In operation the skid is positioned on the ground when the outer face of the belt (11) engages with the ground and the runner (10) is supported upon the upper lubricated face of the belt. When the skid is forced longitudinally, the runner is caused to slide over the belt and to cause the movement of the belt beneath the runner and over the pulleys (13). The guides (16) engage the beads (15) throughout the length of the runner, and holds the belt in concaved position to engage about the polished surface of the runner. As the belt reaches the end of the runner at the rear extremity of the skid, the same is released from the guide (16) and permitted to engage over the flattened surface of the adjacent pulley. Mr. Wells desires to dispose of the patent at a reasonable figure, as he is financially unable to exploit it.



ATTRACTIONS WANTED.

E. F. Stephenson, 250 Vance Ave., Memphis, Tenn., wants to connect with aviators having successful machines and aeronauts with dirigible and free balloons.

CENTER OF PRESSURE.

Question: Please inform me how to find the center of pressure on a biplane whose surfaces measure 5 ft. fore and aft, with a curve of 1:20. The angle of inclination is 6 degrees when the aeroplane is on the ground. Must not the center of gravity be just a little below and back of the assumed c. of p. when the aeroplane is not in motion, considering that because in flight the

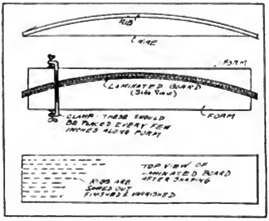
c. of p. moves forward, the center of gravity must be rather in front of the assumed c. of p.?

Answer: One can suggest no convenient way to find c. of p. of an aeroplane except by actual trial. The c. of p. of a small experimental plane having same depth of curvature would be for 6 degrees about 44 per cent from front edge, and if this held true for a large surface it would be 2 ft. 2 in. from front; that is, for a circular arc. For a parabolic curve it would probably be further forward. See discussion of Aerial Experiment Association in June, 1909, number, pp. 175-7. The weight, or center of gravity, should in general be forward of the c. of p. This point depends somewhat on the method of vertical control (the disposition of elevator and horizontal rudder). See also p. 153, April, 1910, AERONAUTICS, and article by M. B. Sellers, pp. 77-79, March, 1910.

HOW TO MAINTAIN CAMBER.

One method of maintaining the camber of ribs, though not generally used, is to use a thin span wire to join the tips, this wire forming the chord of the rib. Ribs are usually bent after steaming, dried and then made impervious to moisture by varnish. As long as they do not absorb moisture they will stay bent.

Laminated ribs can be glued and bent at once while the glue is wet, put thus in a form to dry and when dry taken out and varnished. These will hold their shape, even though they absorb some moisture, providing the glue does not soften.


RIB
WIRE
FORM
LAMINATED BOARD (Side View)
CLAMP · THESE SHOULD BE PLACED EVERY FEW INCHES ALONG FORM
FORM
TOP VIEW OF LAMINATED BOARD AFTER SHAPING
RIBS ARE SAWED OUT FINISHED & VARNISHED

How to Make Ribs

Another method of making ribs is as follows: Take thin boards of the desired thickness and wood and glue them together, one on top of another. While the glue is wet place the laminated board thus made into a press or form the shape of the ribs you want. Clamp the form tightly together and place the whole in a drying oven for several hours. When dry the ribs can be sawed out of this curved board. A correspondent says that if ribs are wet or soaked, then bent on a board and help by bent nails, then dried and burnt a little by a gasoline torch on the concave side, they will say bent.

THE WILLOUGHBY STEERING DEVICE.

Dear Sir:

I was invited by Mr. Harmon recently to witness a flight in his "Farman" machine, lately purchased from Paulhan, who used it at Los Angeles last winter. I was quite surprised to find that it steered in the vertical plane with my patent steering device (applied for on the 16th of June, 1909, several of the claims having already been allowed).

This patent consists in steering an aeronautical machine in the vertical and horizontal planes by a combination of rudders. All biplanes steer up and down by the head alone. All monoplanes steer up and down by the tail alone. In my device the "War Hawk" steers up and down by both head and tail at the same time.

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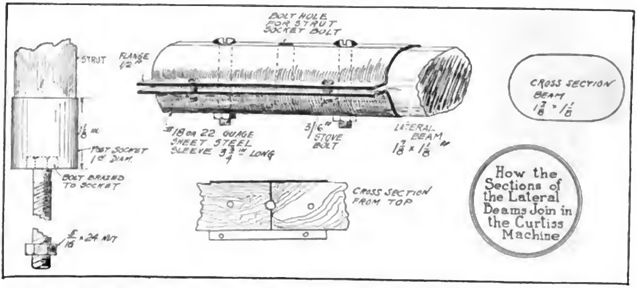
For particulars concerning school, apply
M. L. KASMAR, Sec'y., American Aeronautical Society
CHICAGO, ILL.


BOLT HOLE FOR STRUT SOCKET BOLT
STRUT
FLANGE 1/2"
1 1/8 in.
POST SOCKET 1" DIAM.
BOLT BRAZED TO SOCKET
5/16 x 24 NUT
#18 OR 22 GUAGE SHEET STEEL SLEEVE 3 3/4" LONG
3/16" STOVE BOLT
LATERAL BEAM 1 7/8 x 1 1/8"
CROSS SECTION BEAM 1 7/8 x 1 1/8
CROSS SECTION FROM TOP

How the Sections of the Lateral Beams Join in the Curtiss Machine

By crossing the tiller lines of the forward and after horizontal rudders, an inverse action of the rudders is obtained, elevating the bow and depressing the stern, halving the surface required for each rudder The pressure on the upper side of one and on the under side of the other keeps the parallelogram of forces rigid until a slight directive force is given by the steering wheel.

Three years ago at Brighton Beach I described this patent to Mr. Farman and told him I was putting it on the "War Hawk," and I see he has now paid me the compliment of using it.

At the recent aeronautic convention in New York I was asked by several persons if it was my intention to sue on infringements. My answer was that I would not, and that I was more than pleased if I had added my little mite to the science of aviation. Yours truly,

HUGH L. WILLOUGHBY.

PADDLE WHEEL DEVICE.

Dear Sir:

Dr. Greene of Rochester, who is building an aeroplane, kindly refers me to you for address of parties interested in the idea of a folding slat paddle wheel, which device, he says, has been patented, for sustaining aerial machines. I think I have a method of appreciably increasing atmospherical resistance to downward movement of a paddle or wing and thereby increasing its lifting effect, and would like to get in communication with parties desiring to have such a device made more effective than it has so far proved to be.

JOHN R. GRAHAM,
24 Locust St.,
Rochester, N. Y.

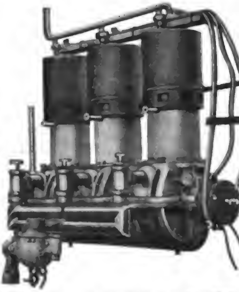
SAFETY DEVICE FOR AEROPLANES.

Gentlemen:

The undersigned begs leave to suggest the following as a possible improvement in safety devices for machines used in navigation of the air, but more particularly for heavier than air machines.

A combination in an aeroplane or air ship of a galvanometer, an electric battery or other device for generating and maintaining a constant electric current and devices adapted to connecting in electrical circuit with the galvanometer and battery or generating device the metallic wires, parts or members of the aeroplane or airship and their connections:

For the purpose of indicating, by means of the galvanometer, injuries or abrasions of said metallic wires, parts or members and their con-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nections, such as would reduce their cross section or materially reduce their strength and safety factor.

The purpose of drawing this claim and publishing it is to prevent it from subsequently being patented, and to give all interested free use of the suggestion, if perchance it should be found to contain any elements of value.

ALBERT W. BUEL,
15 William St., New York.

Ascensions

PHILADELPHIA, June 16.—Dr. Thomas E. Eldredge, Dr. Geo. H. Simmerman and Welsh Strawbridge, in the "Phila. II," attained an altitude of 17,050 feet. The landing was near Petersville, Pa., after 2½ hours; a distance of 60 miles. Dur. 2 hrs. 35 min. It took but 18 min. to drop 17,000 ft. A new high ascent will be attempted, properly equipped with plenty of ballast and supplies. The highest American official record is 16,615. A. H. Forbes went up to 20,600 feet, as recorded last month. There are 28 ascensions on record higher than the Harmon-Post ascent of 16,615, not including Forbes or Eldredge.

PATENTS C. L. PARKER Late Examiner U. S. Patent Office
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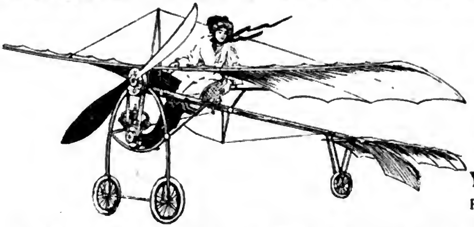

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ST. LOUIS, June 18.—At 5.30 p. m. H. E. Honeywell and W. F. Assmann, left in the "Centennial" to make another attempt to win the Lahm cup. The landing was made 6 miles south of Bowen, Ky., on June 19, at 6.30 p. m. Just after landing a heavy storm broke. The distance is 354 miles.

CANTON, June 18.—J. H. Wade, A. H. Morgan and W. K. Chisholm in the "Sky Pilot" to Fairview, Pa.

ST. LOUIS, June 20.—Miss Julia Hoerner decided to become a pilot. After half an hour an electrical storm came up and the aide, John Berry, helped her make the descent, 9 miles from St. Louis. The balloon was the "Melba."

PITTSFIELD, June 25.—Wm. Van Sleet, Wm. M. Dear and F. M. Christie.

LOWELL, June 25.—Charles J. Glidden, Mrs. M. N. Glidden and J. J. Van Valkenburgh in the "Mass." to Salem, N. H. Dur. 1 hr. 35 m.; dist. 12 m.; alt. 4,100 ft.

ST. LOUIS, July 2.—Wm. F. Assmann, qualified as pilot, taking up two passengers. Landing was near Pattonville, Mo. Dur. 2 hrs.; alt. 6,200 ft.; rained during part of ascent.

PHILA., July 9.—Dr. Thomas E. Eldredge, Dr. George H. Simmerman, Dr. L. F. Fifler and Miss Anna Nittinger, in the "Phila. II," to Mount Holly, N. J. Altitude reached 7,900 ft.

LOWELL, July 9.—Chas. J. Glidden, John J. Van Valkenburgh and Edward E. Strout in the "Mass." to Andover, Mass. Up 40 min.; dist. 4 miles; alt., 2,100 ft.; poor gas. This made Mr. Glidden's 47th ascent.

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I HAVE IN MY OFFICE COPIES OF ALL PATENTS GRANTED FOR AEROPLANES

Patent List.

Robert E. Green, New York, N. Y., 960,539, June 7, 1910, filed June 22, 1909. AIRSHIP. An aeroplane consisting of a plurality of sails at the front and another set at the rear with a propeller intermediately between them. Both sets of sails are pivoted so as to be movable and in addition the rear set is provided with rudders movable laterally.

Louis L. Crane, New York, N. Y., 960,831, June 7, 1910, filed Dec. 21, 1909. FLYING MACHINE. A toy aeroplane the characteristic features of which are a frame composed of several rods secured to a plate at the front and joined at the rear in the form of a tripod, in the center of which extends a rubber band operating a propeller at the front and a triangular tail piece at the rear.

Frederick W. Wuerth, Cincinnati, O., 961,925, June 21, 1910, filed March 15, 1910. ATTACHMENT FOR AEROPLANES, consisting of flexible wings attachable thereto and projecting outwardly therefrom. Means are provided for distending or collapsing the wings and changing the angle of incidence.

George D. S. Reece, St. Louis, Mo., 962,386, June 21, 1910, filed June 10, 1908. AIRSHIP, the characteristic feature of which consists of sets of wings, each wing comprising a frame made up of a rod projecting at right angles from a shaft, and a series of arms projecting from the rod. This frame is covered with cloth and several such wings extend radially from the shaft in the same plane.

Samuel Montgomery, Stockton, Cal., 962,652, June 28, 1910, filed Dec. 14, 1908. FLYING MACHINE of the helicopter class, comprising a main rotative shaft used vertically from the cage or basket containing the motor. This shaft is provided with propellers and at its top a parachute is secured, so arranged that connections from the cage enable the opening or closing of the parachute.

CLASSIFIED ADVERTISING

(Continued from page 60)

ENGINE FOR SALE One new 30 H. P., four cylinder air-cooled aviation engine, equipped with Bosch magneto and Laminated true screw 6 foot propeller 200 lbs. thrust. Engine weighs 197 lbs. Outfit just cost us about $600; will sell for half or will exchange for 50-75 H. P. motor. Address, "Aero Dept.," STEBBINS & GEYNET, Norwich, Conn.

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WE are forced to print all new material this month in small type in order to make room. There is on hand considerable amount of material in type for which we have been unable to find space as yet.

Hour flights abroad are so common that it seems useless to further chronicle them, and in the future we will merely try to print new records made, new machines, especially long flights and events of more than usual importance.

PROGRESS will certainly demand its toll of lives, but there is certainly no cause for alarm. Fatalities have not been as numerous as those which occur in nearly every automobile meet of importance, and the entry list in the aviation meets has been fully as large as that of any motor race. Considering the number of flights made, both at meets and elsewhere, the restricted grounds at which many meets are held, one may feel assured that the percentage of fatalities is small.

A word of caution is necessary, however. Development does not appear to be along the line of making safer machines, but in building faster and more varied types. Familiarity breeds contempt, and aviators should not take the fearful chances that some do.

IT is worthy of comment that aviation abroad has reached the stage where meetings may be held on the same basis as motor and horse racing, where competitors pay entrance fees returnable only on condition, say, three laps of the course are made, and where the sole remuneration consists in the prizes to be won.

Correction.

In the article, "How to Make a Propeller," in the July number, the last two paragraphs, by mistake, were misplaced and put in the adjoining column. The last sentence of the article should read: "This will NOT duplicate, however, a Curtiss propeller, etc." The word "not" was omitted.

Permanent :-: :-: Exposition

THE Permanent Exposition at the office of AERONAUTICS is growing. People are coming in every day to look over the various exhibits and immediate calls on the manufacturers result.

We want to have every manufacturer of aeronautical material represented. If necessary, use the Exposition as a stock room, as some are doing. We want motors, samples of sockets, oils, bearings, magnetos, plugs, tires and anything that may be applicable to the new industry.

Manufacturers should send a supply of their catalogues and print on their circulars, stationery and letters the fact that they are exhibitors in AERONAUTICS' PERMANENT EXPOSITION.

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Profac Food.

What Bishop Says.

" 'Will the Wrights compete for the International Cup?'

" 'No one knows as yet; they refused last year to compete and it is I, Cortland Bishop, who paid the expenses of Curtiss so that one American aviator might compete for the cup and he won.' He adds with a practical and national instinct; 'It cost me a great deal of money.'

" 'It has been said that the International Cup would cost aviators very dearly in expenses, etc., and would only result in the winning of an art object of medium value.'

" 'No doubt, but French aviators are free to come or not as they please.'

" 'Then your opinion is that apparatus of French origin will win over the American's?'

" 'I have not ridden with the Wrights but only with Paulhan. The impression of security is perfect and must be much greater than with the Wrights. These oscillate a great deal in the air and I believe in the superiority of the French.'

"Mr. Cortland Bishop stopped and offered amiably to complete the interview when desired. We shook hands cordially and transatlantically and he renewed his walk towards the Tuileries."

The above statement of Bishop with respect to Curtiss is not an accurate statement of the facts.

The above interesting item was printed in the French organ *l'Aero*, being an interview with the honored president of the Aero Club of America.

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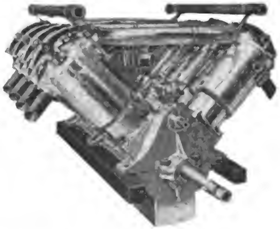
TYPE B-8

60 H.P., Eight Cylinders, mounted "V" shape with a 90° relation to each other. Weight, 278 lbs. complete.



TYPE B-4

30 H.P., Four Cylinders, mounted vertically on a common crank case. Weight, 130 lbs. complete.

Favored exclusively by the experimenter in the science of flight, as they insure to him the maximum of safety

American Builders of the STANDARD VOISIN TYPE AEROPLANE

"THE ARISTOCRAT OF FLYING MACHINES"

THE RINEK AERO MANUFACTURING CO.

EASTON, PENNA.

HAMILTON
WRITES ABOUT
MOBILOIL

Hotel Astor
New York

Vacuum Oil Company,
New York,
N.Y.

June 14, 1910.

Gentlemen:

I wish to let you know that the oil which befouled my spark plugs was not your oil. I used MOBILOIL going to Philadelphia and had no trouble. Owing to misunderstanding, I was supplied there with some other oil, which caused the trouble resulting in my descent. Had I used Mobiloil on my return flight, I should, undoubtedly, have made the trip home without a stop.

Very truly yours,

Chas. K. Hamilton

CURTISS
USED
MOBILOIL
ON HIS
ALBANY-
NEW YORK
FLIGHT
May [illegible]

HAMILTON
USED
MOBILOIL
ON HIS FLIGHT
FROM
NEW YORK
TO
PHILADELPHIA
June [illegible]

Almost all aviators in this country and Europe use Mobiloil.

FOR SALE BY DEALERS EVERYWHERE.

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VACUUM OIL COMPANY

ROCHESTER, U. S. A.

Vol. VII SEPTEMBER, 1910 No. 3

AERONAUTICS

THE AMERICAN MAGAZINE
OF AERIAL LOCOMOTION

PRICE 25 CENTS 38th ISSUE

Satisfied with Elbridge Engines?

ELBRIDGE ENGINES ARE ALL SOLD WITH AN UNLIMITED GUARANTEE BASED ON ACTUAL PERFORMANCE

¶ Recent flights have been made with ELBRIDGE FEATHERWEIGHT engines by J. J. Frisbie at Mineola, Dr. Wm. Greene at Rochester, Capt. G. L. Bumbaugh at Indianapolis, Edward H. Skinner, South Beach, and many others.

¶ No one ever complained that an Elbridge engine lacked power or speed. Not only do they represent more actual horsepower for weight than any others on the market; but broken parts are practically unheard of. You need never descend for "Lack of Power" if you use Elbridge Engines.

J. J. Frisbie at Mineola, N. Y.

ELBRIDGE ENGINE COMPANY

10 Culver Road - - - - - Rochester, N. Y.

HF

WE MAKE YOU FLY

"That engine will fly any properly built plane"
—Capt. Thomas Baldwin

"I made a 25 mile flight (at Mineola) yesterday (July 12), the engine not missing once"—George Russell

The HF Flying Power Plant

Four cylinder, vertical, four cycle, water cooled engine, 30 H. P. and 50 H. P.; 100 H. P., 6 cylinder

1. Engine.
2. Oiling System, force feed.
3. Oil Tank, aluminum, integral with crank case.
4. Carbureter (aluminum), aviation type.
5. Water, circulating pump.
6. Radiator, special HF aviation type.
7. Magneto, Bosch type or Eiseman Automatic advance.
8. Copper Gasolene Tank.
9. Propeller, laminated mahogany.
10. Steel hub and thrust bearing.
11. All necessary wiring; piping for gasolene, water and oil.

COMPLETE TOOL KIT—Water plug, wrench, socket wrench for plugs, screw driver, wrenches for all nuts used, monkey wrench, pipe wrench.

Price, 30 H. P. Power Plant, $1250.00
50 " " " 1675.00

The customer has no further expense except gasolene and oil

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SOUTH GLASTONBURY, CONN.

The Name

BURGESS CO. & CURTIS

MARBLEHEAD, MASS.

guarantees

Excellence in Design and Workmanship

Our Aeroplanes are Safe
They Fly Well, Too

¶ Our Model *A* flew successfully but our Model *B* beats it.

¶ Our new Model *C* is even better.

¶ The price remains the same.

Call any Day—Weather Permitting
at our Aviation Grounds,
Newburyport, Mass.

For a Convincing Demonstration

Cheering Hamilton's Philadelphia Flight

THE RECORDS OF HAMILTON, CURTISS, WILBUR AND ORVILLE WRIGHT, FARMAN, CALDERARA AND MOISSANT WERE MADE IN BOSCH EQUIPPED AEROPLANES

Vol. VII. | Aeronautics | No. 3

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PROVING HORSEPOWER—BY REACTION

DELIVERED BEFORE THE AERONAUTICAL SOCIETY

By C. H. Inman.

NOTE:—The author of this paper has devised an apparatus for indicating the r. p. m. of an engine and the propeller thrust at all times during flight. The paper contains much food for thought.—THE EDITOR.

FOR a number of years I have noted the need of some reliable method of determining the horse power of small internal combustion and other portable engines, and of late the possible value of some device which could be attached to aeronautic and other similar engines to show at all times the horse power developed by the engine while in actual service. The steam engineer can tell by a glance at his steam gauge whether his pressure is high or low and knows at once if he is supplying his engine with the maximum pressure. The gas engineer has not this aid, but must trust blindly to obtaining the right combinations of numerous conditions and then guess at the result. * * * * *

There are various methods by which this may be done, of which I mention three, besides the one I will describe later; and of which last-mentioned method I believe I am the originator. * * * * *

Should my method prove of value, I will exact the condition that the same be called as I have christened it, "The Reaction Test," to determine the horsepower of engines and other machines where applicable; and further, that the device be accredited to me unless someone else can prove a better and prior claim.

The first of the three methods mentioned, I will state, is the well-known "Prony brake test," which you will later note that I seem to follow for a way, but a close analysis will show a decided departure in some respects.

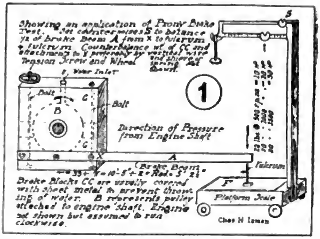
The second method in merit I will accord to the "dynamometer," also well known among engineers. One application of which is to attach a fan or blades to the shaft of the engine, said blades being of a known area and set at a certain distance from the shaft centers, at a given speed exert a certain amount of resistance, according to area, diameter, speed and atmospheric density. From these we may calculate constants to be used in conjunction with speed of engine.

The next method is an electric one or the known resistance of electric currents flowing through proper conductors, or magnetic effects.

These three methods are all of merit in certain places, but none of them can be utilized, as far as the writer knows, while the engine is developing useful work, possibly excepting some of the electric devices. I will endeavor to show how how a device may be applied to aeronautical and other engines showing at all times the exact power exerted by the engine without absorbing any of the energy developed by the engine while in actual service. Said device, I think, need not weigh more than 10 pounds for a 50 horsepower engine, and may be applied equally well to a revolving cylinder type or the ordinary crank shaft type. With the aid of another attachment of light weight the exact pull or thrust of propeller may be measured at the same time in a similar manner. This may be useful to aid in determining the variations due to changes in atmospheric condition and also in different altitudes, as well as showing at once the best mean average speed, power absorbed and pull of propeller under varying conditions, absolutely doing away with guesswork. With the aid of a suitable speed indicator and a graduated strip or ribband of paper passing over a small, light drum driven by suitable means from engine shaft, it will be possible to obtain an accurate record under varying atmospheric conditions.

Now in describing my method I will follow for a way the "Prony brake" system, the same rules for calculating being used; but the method of procedure being diametrically opposite, there being no braking effect in my method and positively no absorption of power as in the other methods. I measure the power from the end of a lever practically in the same manner as may be done on the Prony system, but on the opposite side and contrary-wise direction or in reverse direction of transmitted power.

Assuming a horse power to equal 33,000 pounds raised one foot high per minute, a pulley 33 ft. in circumference rotating 1,000 r. p. m. would, with a resistance of one pound at the periphery, be exerting one horse power; with a 10-pound resistance, 10 horse power; 50 pounds resistance our load equals 50 horse power. If the pulley is rotating 500 r. p. m. then our indicated horsepower equals one-half of the above stated amounts. If speed of pulley should be 2,000 r. p. m. then our reading would be doubled or 2, 20 and 100 horse power, respectively. This pulley, like the North Pole, does not exist, so all persons are warned not to fit out any expeditions to search for it, but is used only as an illustrative point.


Showing an application of Prony Brake Test. Set countermoises S to balance ½ of brake Beam A from X to fulcrum + fulcrum. Counterbalance wt of CC and attachments to X preferably by vertical wire and sheave or spring. Not shown.
Tension Screw and Wheel
W, Water Inlet
Bolt
Bolt
C
B
C
1
S
Direction of Pressure from Engine Shaft
X
A
Brake Beam.
33÷π=10-5"÷2=Rad. 5' 2½
Fulcrum
F
Platform Scale
Brake Blocks CC are usually covered with sheet metal to prevent throwing of water. B represents pulley attached to engine shaft. Engine not shown but assumed to run clockwise.
Chas H Inman

But we do nevertheless utilize a lever in the place of the pulley and for convenience sake in computation consider it to equal one-half the diameter of the pulley, although it may be in practice preferably shorter and also on that account compounded to reduce weight and pressure on the same principle as the platform scale, or a lever of the second order, therefore, 33 ft. circumference ÷ 3.1416 (pi) ÷ 2 = 5 ft. 2½ in., radius of wheel or the length of our lever and the same pressure exerted at the free end of this lever will register the same results on the platform scal or calibrated spring as the weight or resistance on the pulley of same radius with corresponding speeds.

Now Diagram No. 1 will show the application of the Prony brake principle. Let A be the lever, B the pulley attached fast to engine shaft, the exact diameter of pulley is not essential, but the length of lever is; C the brake blocks, D the means to tighten the pressure on pulley, E the flow of water to prevent the ignition of wooden blocks and overheating of pulleys by friction, F the platform scale on which the thrust of lever is weighed. This thrust is in the same direction as the engine shaft and engine must be bolted down or otherwise well secured to prevent overturning. A speed indicator being used in conjunction with the apparatus as in the dynamometer method and a constant to assist in the computations.

Now as the method is generally well understood and may be readily observed from the diagram, it may not be necessary for me to go into further details of the Prony brake principle, therefore in Diagram No. 2 I will illustrate my method of "Reaction Test."

Let A represent the engine, B the support for engine which may include a ballbearing and slipped on engine shaft, but preferably a short, projecting part of hub supporting engine shaft bearing. At each end of crank case and concentric with shaft, permitting a free movement of the entire engine and crank case independent of crank shaft movement, through a small arc of possibly 5 deg. will be sufficient.

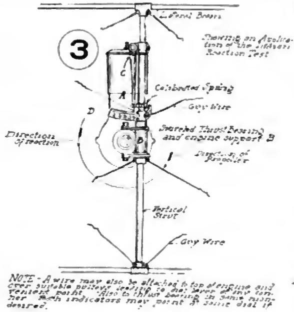
Connections to engine, such as water circulation and supply pipe must be made flexible, of course, to permit free movement of entire engine through the small arc needed. Should engine be of a design which is top heavy; that is, the center of gravity very much above the crank shaft, then we would probably have to counterbalance by attaching underneath the engine crank case, radiator or some other part of the equipment; or it is permissible to make our engine supports large enough and eccentric to shaft to obtain center of gravity; in which event a flexible or universal joint would have to be provided for propeller shaft. This overbalance might not effect reading but a very small per cent while on an even keel, but doubtless would if a violent rocking motion were given to plane or wherever the appliance were used, but as it is intended solely for aeronautical work, we will not further consider outside effects.

In the type of engine which I am now developing and have patents pending, the cylinders are diametrically opposed in pairs and the center of gravity lies nearly on the crank shaft, therefore they normally assume a horizontal position. Let C represent our lever which we will compound on to the indicator hand to reduce weight and power of calibrated spring required. C being bolted fast to crank case moves through the same arc of vibration. D represents registering dial on which are indicated the pressure of the lever in pounds, corresponding to the 10-ft. pulley first mentioned. It may be noted here that the thrust of crank case lever C is in the opposite direction of crank shaft, contrary to the other methods above mentioned; my theory being that the force exerted on the crank shaft is also equalled by an opposed force from the crank case in those types where crank shaft revolves and the reverse order in the revolving cylinder type. In the latter case we would merely attach our lever to one end of the crank shaft and in this event allow free movement as before stated. It only remains now to attach another small lever and dial to the thrust bearing of propeller to determine the pull of same and a small speed indicator attached to engine to complete our equipment. The power dial will now show our torque exerted, the speed indicator the r. p. m. of engine and the propeller dial the pull in pounds. If we do not wish to add extra mechanism to compute our indicated horse power we may do it easily mentally. For instance, speed indicator shows 500 r. p. m., power dial 40 pounds, we are securing 20 horse power. The propeller dial speaks for itself and if propeller is properly designed should show a pull of not less than 9 pounds per horse power developed, or in this instance 180 pounds.

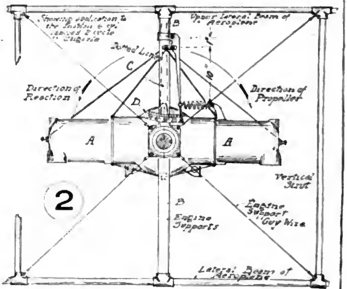
Should our speed dial register 1,000 r. p. m., then our reading with the same pressure on power dial would be 40 horse power and our propeller should show 360 pounds pull. Under favorable atmospheric conditions and engine details. Should there be a variation due to altitude or change of atmospheric condition, the power dial will indicate by the pointer if the engine does not keep up the pressure, whether due to lack of fuel, or air, or other cause, as any extra friction due to striking pistons or hot journals will not be registered, including also improper fuel mixtures, etc. Should the atmosphere be very light and thin, then the speed dial may show the engine is turning over all right, but with a corresponding reduced torque and a falling off or normal maximum pull of the propeller per indicated speed, thus we may be enabled to tell at a glance what is wrong. A wind anomometer may assist in securing positive data on which to obtain more accurate calculation as to cause and effect of various altitudes and changes of atmosphere in the operation of aeroplanes and other kindred subjects.

By utilizing the three indicators as previously mentioned, we may further make note of other phenomena which will be of value to the aviator and scientist alike. We can measure in actual service the variations in propeller thrust due to increased or decreased speed of plane, also due to variations of engine before inertia of machine has been overcome. Also to variations due to ascending and descending from elevations. The effect when striking a gust or eddy of air. The effect can also be observed independently on engine, plane and propeller of the result of a

(Continued opp. page 88)



NOTE—A wire may also be attached to top of engine and over suitable pulleys leading to the lever at any convenient point. Also to thrust bearing in same manner. Both indicators may point at same dial if desired.



The Bowden Patent Wire Mechanism

FOR *the* TRANSMISSION *of* RECIPROCATING MOTION THROUGH A FLEXIBLE AND TORTUOUS ROUTE

THE Bowden Wire Mechanism is particularly adapted for Motor Car, Motor Cycle, Motor Boat and Airship Service as follows: For

Brakes for Cycles, Motor Cycles.
Brakes for Motor Cars, Light or Heavy.
Valve Lifters for Motor Cycles.
Ignition and Throttle Controls for Motor Cars, Motor Cycles, Motor Boats and Airships.
Carburetor Ticklers.
Sprags for Motor Cars.
Muffler Cut-Outs for Motor Cars, Motor Cycles, Motor Boats and Airships.
Auxiliary Air Controls for Motor Cars, Etc.
Solarclipse Gas Lamp Shades.

What it is.—The Bowden Wire Mechanism consists of but two parts—a closely coiled and practically incompressible spiral wire, constituting what is termed "the outer member," and a wire cable, practically inextensible threaded through the above and termed "the inner member."

What it does.—Previous to the introduction of the Bowden Mechanism the usual mechanical method of transmitting power in other than a straight line was by means of angle levers and rods, cables and pulleys, and other such devices, all of which necessarily involve considerable complication, besides increased labor and expense in adapting them satisfactorily to the user's requirements The Bowden Wire Mechanism dispenses with all these difficulties, while enabling power to be transmitted by the most tortuous route. The mechanism is complete in itself, and requires only that one member shall be anchored to a stop at each end, and that the other member shall be attached to an operating lever at one end and to the object to be moved at the other.

¶ The opportunities for the use of the Bowden Wire Mechanism are practically unlimited, and in every case its employment is accompanied by decreased cost of actuating mechanism, simplicity, instantaneous operation of actuated parts (due to absolute lack of lost motion) and reliability.
¶ The Bowden Wire Mechanism may be adapted to impart either a pulling or pushing movement.

Over Two Million Feet Sold Annually

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SOLE IMPORTERS
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The
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Dayton, Ohio

Sole Makers
and Exhibitors
of the Famous

WRIGHT
FLYERS

¶ Both 'planes and motors built entirely in our own factory

THE WRIGHT COMPANY

To avoid type description in connection with "Construction Aids" has been the aim all along, making the sketches themselves fully explanatory.

Fig. 6 illustrates an interesting article by Mare Paird in our English contemporary *Aeronautics*. He says:

"The carrying surfaces of a monoplane enter into two classifications; the rigid and the flexible. The former type, which forms the rational solution of a light framework, is so expensive and so fragile that it has not been generally adopted. The latter type, on the other hand, has now been made to acquire a sufficient degree of rigidity.

"Instead of merely nailing down the cross ribs at their intersection with the main and secondary transverse spars of the wing, the joint at these points is now stiffened by various bindings, small blocks of cork glued in the corners, and other similar devices. Small square strips of Irish linen, even, glued in every corner have proved to strengthen the Blériot type of wing to a material degree. The saw-cuts made in the distance pieces of the ribs, by the use of a band-saw (instead of a fret-saw) have to be closed by some process of this kind. (A)

"The general arrangement of the framework of a large wing, measuring some 20 ft. span from root to tip, is shown in (B). Strips of wood, preferably spruce, 1 in. wide, are used for the cross ribs. These taper down at either end, since the greatest strain nearly always falls about the center of their length (C). The distance pieces are carved out of willow ¼ in. thick (D). They are fixed to the ribs by means of linen tape bound three or four times round and glued down.

"The built-up transverse beams are made of two ash boards, ½ in. thick and 2 in. wide. A small number of distance pieces are sufficient to keep the boards together, since the ribs are placed only 1 ft. apart. In fact, three distance pieces for each beams are ample; two are utilized for fastening the steel bands to the wings, as shown in (E), and one to strengthen the root.

"The construction of the fuselage of a monoplane has given rise to innumerable experiments, designed to produce a structure combining extreme lightness with very great strength. As a matter of fact, one may state without exaggeration that those structures that present the appearance of greatest finish and neatest workmanship are generally the heaviest and most liable to break. Heavy, if aluminum sockets are employed; breakable, if any holes are bored in the beams. These members of the fuselage should never be pierced or weakened. They require a tight binding on their whole length, or at least in the vicinity of the struts. In this connection I may mention a useful tip, which is illustrated in F and G, and which has been found very successful in practice."

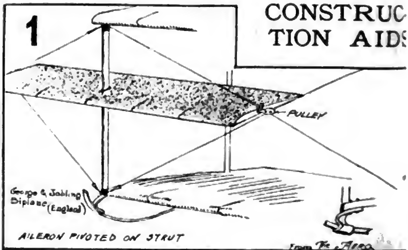
A valuable feature has been added to the aeronautic department of the Philadelphia *Inquirer's* Sunday issue, consisting of a weekly article by an expert, who writes under the name of Birdman. These articles are written in a bright, conversational style, and are replete with interesting facts and gossipy discussion of timely aeronautic matters. The *Inquirer* inaugurated a regular aeronautic department more than two years ago, at a time when many other newspapers were printing facetious articles about "present-day Darius Greens," belittling the efforts of aviators whom they now laud to the skies. The chief characteristic of this paper's aeronautic department is its sane editing. It wastes no space on fanciful schemes with absurd illustrations, but is a leader in the publication of real news and authoritative articles on aeronautic subjects.

The returns from the Louisville "meet" on June 18-19 are of interest to show the results under proper management.

The sum total taken in was $33,636 in two days. The affair cost about $11,000, leaving a profit of $22,636. Had Curtiss been able to fly an hour earlier on one of the days, it would have meant a considerable increase.

CONSTRUCTION AIDS

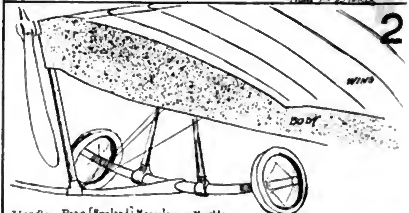
1



AILERON PIVOTED ON STRUT

From The Aero

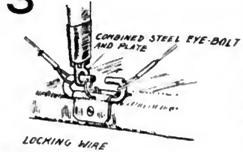
2



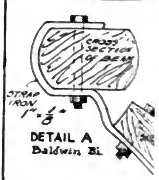
Handley-Page [England] Monoplane with wide hub wheels and a springy axle of wood

From The

3

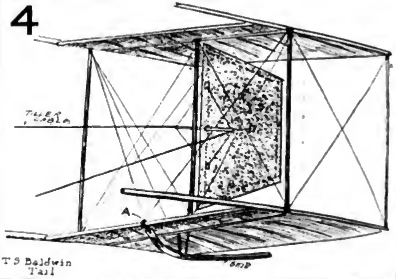


Wright Strut Fastening



DETAIL A
Baldwin Bi

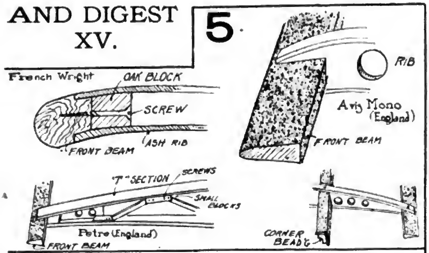
4



T S Baldwin Tail

AND DIGEST XV.

5



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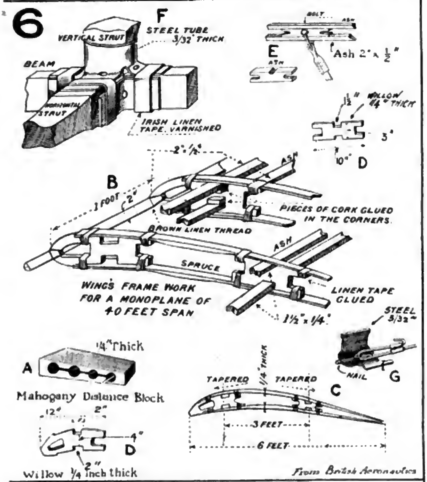
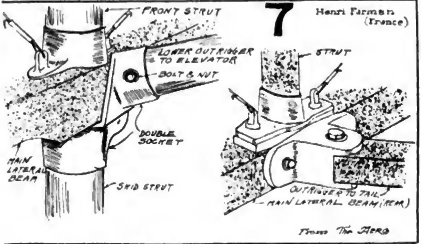


From British Aeronautics

7



From The Aero

J. Prentice, Captain, U. S. A., stationed at Fort Hancock, N. J., has been working for a considerable period on the structure and curvature of the gull's wing, building many models and a large 30-ft. surface, made to scale to duplicate a gull's wing. It is Captain Prentice's theory that a surface after this pattern will prove much more efficient than the usual type of plane, and will enable flight at speeds down to 10 miles an hour. He has had exceptional opportunity for studying these birds, and he has observed them in free flight in smoke to obtain data on the action of the air currents leaving the wing.

William Evans, 817-A East Fifteenth St., Kansas City, Mo., has bought a Greene biplane equipped with a four-cylinder Elbridge engine. He will give exhibitions with it.

Charles K. Hamilton's new biplane, of the Curtiss type, is progressing. Walter Christie has the 8-cycle "V" 100 h. p. engine well in hand. This is intended to weigh less than 200 pounds. The piston rods are of tubular steel, the wrist pins, connecting rods and heads being bored wherever possible to reduce weight. The controversy between Hamilton and Glenn H. Curtiss is still in flight.

Lewis Strang, the famous driver of automobiles, has bought the imitation Curtiss biplane built by Fred Shneider for G. E. De Long, of the Elbridge Engine Co. This is fitted with an Elbridge 4-40-60 2-cycle motor, Bosch magneto, Schebler carburetor.

The public interest in aeronautics has been turned to good account by L. E. Dare of 216 West 104th St., New York, who recently returned from a tour of the country, showing principally in large department stores. He gathered together large-size working models of all the well-known flyers, with pictures, etc., to decorate the exhibit. A lecturer demonstrated the models at certain hours every day and explained to all inquirers the business of every part of the machines. The stores featured the exhibition, which covered about 400 sq. ft., in their advertising, and great crowds were daily visitors. In some cities the public schools attended in classes.

Ward and Brodie are trying out the Prof. J. J. Montgomery monoplane in Chicago and are making daily flights in James E. Plew's Curtiss machine.

Comparing the Gnome and the Adams revolving motors, Erle Walford gives credit for the early conception and practical work of the Adams-Farwell construction and finds them similar in principle. While the greater lightness belongs to the Gnome, the Adams has important constructive advantages. The power of the engine is controlled by varying the compression. A lever permits the adjustment of the inlet cam with relation to the revolving engine. For full power the cam operates as usual, but otherwise the inlet valve remains open during part of the compression stroke, so that part of the gas is blown back in the inlet pipe and less is compressed. This has the advantage that, when the engine is throttled down considerably, the pressure within the cylinders does not fall very low on the suction strokes, as in ordinary engines, and the lubricating oil will not be liable to be drawn past the piston rings into the combustion chamber. By this provision one of the great difficulties of revolving motors seems to be obviated in the Adams type. It has no exhaust pipe or muffler, but auxiliary exhaust ports at the bottom of the stroke break up the exhaust into two portions and reduce the noise. The gas is not fed into the crank chamber, as in the Gnome, but into an induction chamber, and thence through five radial inlet pipes to the tops of the cylinders, so that this engine does not resemble the radial-flow turbine as much as the Gnome, in which the gas travels radially outward through valves in the piston head, and then expands inward, passing outward through the cylinder heads again on the exhaust stroke.—*The Autocar*, June 4.

Glenn Curtiss Flies from Albany to New York City

In a Bi-plane Equipped with PALMER AEROPLANE TIRES

Hammondsport, N. Y., June 4, 1910

THE B. F. GOODRICH COMPANY
Akron, Ohio

GENTLEMEN:—I have your letter of June 1st and thank you for your complimentary expressions.

The Palmer Tires, with which I equip all of my aeroplanes give the best of satisfaction for the purpose. The light weight ***does not greatly impede the lifting power***‡ of the machine and the great resiliency enables me to ***land without shock on the hardest ground***† and to ***pick up speed quickly in starting****. I am glad to credit a part of the success of my aeroplane to the Palmer tire.

Yours very truly, (Signed) G. H. CURTISS.

*** "Curtiss jerked a lever. The machine glided along the ground for perhaps fifty yards, and then rose steadily, gracefully in the air."—*The Outlook*, June 25.**

† "Calm and cool, as unruffled as if stepping out of a street car. Curtiss, as he landed, called out, 'where's that oil and gasoline?'"—*The Outlook*, June 25.

‡ "There was a sudden whir of the engine, a dash across the field, and then like a huge bird Curtiss, in his aeroplane, rose gracefully in the air, circling about so as to come within the limits of Albany."—***The Outlook*, June 25.**

The Palmer Aeroplane Tire

Manufactured by

The B. F. Goodrich Company - - - - Akron, Ohio

EQUIP YOUR AEROPLANE

WITH

GOOD YEAR
AKRON OHIO

Aeroplane Fabrics
Aeroplane Tires
Bumpers

Tell us what you need, and let us explain the superiorities of GOODYEAR Materials.

THE GOODYEAR TIRE & RUBBER COMPANY
Akron, Ohio

AEROPLANE TIRES

Clincher type only, which is the lightest and most satisfactory type for aeroplanes

SIZE	Weight complete
20x4 in.	6¼ lbs.
26x2½ "	6½ "
28x2½ "	7½ "
28x3 "	8 "
28x3½ "	8¼ "

Wheels also furnished for the above sizes

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AEROPLANES AND BALLOONS IN MEXICO

By E. L. Ramsey.

The Buen Tono Bleriot Monoplane Totally Wrecked.

THERE was great enthusiasm displayed on the 24th of July to attend the trials of the Bleriot monoplane, made by Sr. Manuel Lebrija, the Mexican aviator, on the lands of the Rancho de Valbuena, and 8 a. m., at which hour the trials were scheduled to commence, the field was filled with an immense crowd, that anxiously and impatiently awaited the promised flights.

After several successful trials, which earned the daring aviator tremendous applause, and when the crowd had gone, quite a serious accident occurred, which, had it not been for the agility of Sr. Lebrija, might have resulted fatally.

This accident took place when the aviator was returning to the hangar after having made an excellent flight, which easily surpassed all others made thus far, making all the turns with ease and having maintained a good height from the time he started until the accident took place. As he was coming along, and on descending, he struck a place where the mud was extremely soft and sticky, causing the machine to skid along for quite a distance and to turn over on its right side, and as the wheels sank into the mud and resisted the forward movement, the frame of the machine broke in two from the force of the impact, the part containing the motor and propeller sticking in the mud. Minor injuries were received by the aviator.

The Captive Balloon "Ciudad de Mexico."

The captive balloon which has been on exhibition in the City of Mexico closed its season the other day and will certainly be missed as an attraction. The ascensions were discontinued on account of the rainy season.

Great crowds would throng the streets to watch the numerous daily ascensions, and many of the most prominent people of the metropolis including Vice-President Ramon Corral and Governor Guillermo de Landa y Escandon, had the pleasure of making the trip and enjoying the beautiful panorama presented by the Valley of Mexico when looked at from a great height. The weather was generally superb and the atmosphere so clear that the innumerable villages which surround the capital and the cultivated fields and orchards which dot the valley looked like a gigantic checker board.

On the last ascension the pilot, Sr. Manuel Lebrija, who has also made several short flights in the Bleriot monoplane, took up a party of his friends, on which occasion the balloon was freed. The party descended near a railway station, where a lunch which was carried in the basket of the balloon was served.

Mexican Aviator Makes His First Flight.

On July 8, in Guadalajara, on the large and level lands known as "Las Ajuntas," to the right of the private road of the Guadalajara Automobile Club, where plenty of space is to be had for the purpose, though a tree here and there makes it dangerous for the aviator and machine should the latter not be provided with guiding gear, the preliminary public trials of the aeroplane "Jalisco," invented by Sr. Lopez Mejia, a Mexican youth, were held.

The machine was run along the course several times at a pretty good clip in order to test the engine, which was imported from Europe, then the aviator raised his elevating planes slightly and the machine rose about 3 ft. and skimmed along. Finally, after several attempts, an elevation of about 6½ ft. was attained, but on attempting to make a turn one of the main planes struck a tree and broke, which brought the trials to an end until such time as repairs can be made, when another demonstration will be given.

The trial was a success, and showed that the machine would fly. The large crowd in attendance expressed its appreciation by hearty cheers and prolonged applause, and the young inventor was warmly congratulated.

New Aviator Will Fly from San Antonio to Mexico City.

Henry Alfred Schwob, a young French marquis who has come into prominence here through an inheritance of $200,000 gold, is the latest aspirant for aeronautical honors in Mexico.

Mr. Schwob states that a biplane is being built for him at San Antonio, Tex., which will have radical features of his own design which are not used on any of the other aeroplanes, and will be equipped with a 140 h. p. motor, to allow 40 per cent for the loss in power on account of the high altitude.

He also claims to have partially built a biplane with his own hands in Europe and has also made several successful flights in France. He was contemplating flying from San Antonio, Tex., here in his machine, but as he is afraid that there might be long stretches where water and gasoline could not be obtained, and as his machine is a light experimental one and not equipped for carrying supplies, he has given up the idea and will have it sent by express. He anticipates no difficulty in flying with his machine at this altitude. He expects to be ready to make his first flight in about a month or two.

The Monoplane as a Freight Carrier.

Perhaps the first practical adaptation of the aeroplane for freight-carrying purposes in the world is shortly to be made by A. A. Williams, an aviator of Douglas, Ariz., he having contracted with Dr. J. J. P. Armstrong, who owns a placer mine in the Chihuahua Mountains, in the Sierra Madre range, near the city of Chihuahua, Mexico, for the transportation of placer mining machinery from Douglas to his property, a distance of about 300 miles. The machinery in question consists of pieces which can be made up into 100-pound lots. The machine which Williams will use is a monoplane.

When the above notice was brought to the attention of officials of the Mexican government, immediate instructions were given to Sr. de la Barra, Mexican ambassador at Washington, to hurry the signature of the treaty for aerial navigation, which is at present being considered between the United States and Mexico. The Mexican government, when proposing such a treaty to Uncle Sam, not thinking, perhaps, that such legislation would be required so soon for the purpose of regulating aerial freight traffic.

Aeronautical Society Lectures Printed.

The Aeronautical Society (New York) has issued the first of its series of bulletins containing all the discussions and lectures held at the special twice a month meetings. Since last fall stenographic notes have been taken at each of these meetings with this end in view. The first bulletin contains the talk of James H. Scarr, head of the Weather Bureau in New York City.

An abstracted aeronautical dictionary has also been prepared for distribution and copies will be sent to the various newspapers of the country for their use. It is hoped that this missionary work will result in the doing away with such absurd headings as:—

Airship Wrecked at Mineola.
Dr. Walden Injured in Monoplane.

which appeared in several of the New York afternoon papers recently. Even in Philadelphia the Aeronautical Editor is up on the new Art.

FLYING OUT ON THE PACIFIC COAST

THE WISEMAN-PETERS BIPLANE

By Cleve T. Shaffer.

EXCEPTING power plant, this machine would appear at first glance to be an exact duplicate of the Farman machine in which Paulhan made his height record at Los Angeles, but on closer inspection a number of modifications and some improvements may be observed. For instance, the diagonal cross strut, or stay, on each skid, Curtiss lateral control by shoulder brace, and elevator and rudder control by wheel; skids on ends of plane; skids on rear cell, which on striking the ground allow the rear edge of the lower plane to swing up and thus avoid injury in landing. One noticeable defect, to the writer's mind, is the flatness of the planes, the camber being only 1 in 36, which, no doubt, accounts for the large horse power and high incident angle. It is claimed that this machine has flown with a 30-35 horse power motor, but evidently results were not satisfactory as a 60 horse power is now installed.

The machine is of very neat construction and workmanship, though the sockets appear cumbersome and have altogether too much head resistance. Except on rudder, elevator and aileron controls, where Roebling "aviator cord" is used, oil-tempered steel wire is used throughout, No. 12 guying the planes, No. 9 attached to skids and No. 6 between skids. Ferrules are used in fastening. Efficient turnbuckles of their own design are used, a small one testing 1,149 pounds, a medium and a large testing (stated) 4 tons. They consist of a McAdamite body of suitable shape into which screws the eyes by right and left-hand threads, a lock nut on one of the eyebolts is screwed against casting or body end and locks.

The skids extend out in front quite a bit farther than in the Farman, ferruled end being guyed to frame in usual manner.

Spread is 32 ft., length 42 ft., surface 372 ft., weight 850 pounds without operator.

Planes.—32 x 6, lower cut out to beam for propeller, are double covered, ribs and beams enclosed with Naiad No. 6; beams are laminated, front 1¾ x 2½, rear 1½ x 2¼; ribs are built up, nailed and glued to beams, camber 2 in., 30 in. back from front edge; struts, oval, 1½ x 1 in. center cross section; ½ x ¾-in. ends. Incident angle very high for biplane practice, though measured, is not to be made public as yet.

Chassis.—Regular Farman type—Two skids and four wheels, with the addition of a diagonal cross strut from underside of lower rear beam to skids in front of wheels. Chassis struts are 1½ x 2¼ in., cross section oval. McAdamite sockets of suitable angle. Holes drilled into casting are used for guy-wire fastening; this is not very good practice unless some sort of a bushing is used, as the vibration of the wires wears the metal appreciably. Am indebted to Mr. Peters for this information, which I believe is not generally known. Skids are of hickory 1½ in. wide, 2⅛ high. Wheels are 28 in. with a 2¼-in. tire, steel rims, narrow hubs and babbitt friction bearings, are 33 in. apart on a 2¼-in. axle, held in place on inside by stay collar and outside by a cotter pin. An eyebolt set in the skid takes the ends of the two ¾-in. 18-gauge stays, other ends fastening to collars on axle. The method of hanging skid is ingenious; the skid passes through two rectangular links of ¼ in. iron, which engage grooves on bottom of skid. Heavy leather straps, adjustable by a buckle, fasten the links to two other links of 1¼-in. square-moulded rubber; these latter pass over axle and are held in place by wooden shoulders bolted to axle. Light skids are pivoted from rear beam at each end; wires with a rubber elastic medium, to take up shock, run from middle of skid to front beam.

Controls.—The elevator axis is at a point 12 ft. out in front, a McAdamite casting connecting the two spars and serving as a bearing for the shaft. This is placed a little forward of center of the double-covered plane, which is flat on the bottom, size 3 x 8 ft., and works in conjunction with a flap hinged on the upper rear surface. Three posts are placed on the front and two on rear. Tail planes are 8 x 6 x 6 ft. apart, supported by two skids (see general description). The front edge is 14 ft. 3 in. from rear edge of main planes. Outrigger spars are two-ply laminated, 1 1/16 in. square section, struts same size as in main planes, 48 in. apart.

The rudder is 4 x 6 ft., placed between planes on front middle strut. A cord prevents more than 18-in. movement to each side.

Ailerons, 1½ x 6 ft., hinged to rear beam by three hinges.

Steering wheel, automobile, spider bored out to lighten, post pivoted at center (see photo) between seat and engine base frame, to which are mortised and bolted the V's which hold the stationary foot rests. Aluminum treads are placed on these, giving the machine a finished appearance.

The shoulder brace is laminated and the seat of wickerwork.

Power plant.—A 60 horse power Hall-Scott 8-cylinder engine drives direct a 7 ft. 8 in. Hall-Scott propeller of about 4½-ft. pitch—not uniform; blade 12½ in. wide with ½-in. camber at this width. Thrust at 1,400 r. p. m. (stated), 280 pounds. Shaft approximately horizontal in flight. Motor is equipped with a Bosch magneto. Gear water and oil pumps. Oil tank fixed to base of motor. Radiator placed over and in back of operator. Gasoline tank, three-gallon, supported by wires. Engine and seat base clamped to beams by ⅜-in. U bolts.

On July 24 three flights of about a mile each were made without accident, including turns. The machine handled excellently with J. W. Peters pilot.

AERONAUTICS is greatly indebted to the courtesy of the owners for allowing its representative to go over the machine so thoroughly and secure the above valuable data for publication. Mr. Don C. Prentiss and Mr. J. W. Peters were especially kind.

O'Brien Flies Farman Type.

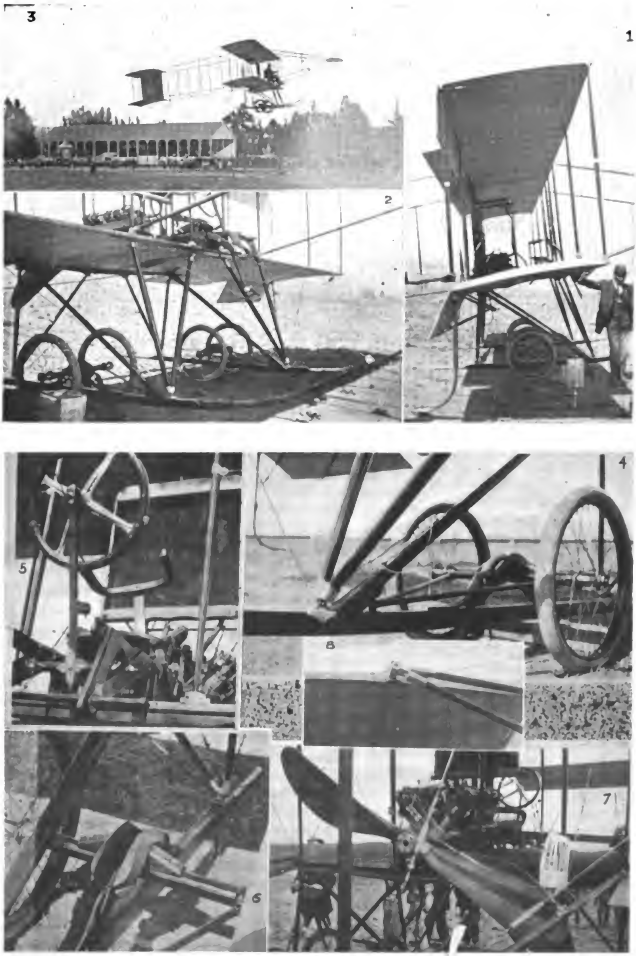
Clifton O'Brien, of the Pacific Aero Club, has a Farman-type machine. He reports having made several flights, longest being about a quarter mile. In his last flight he rose from the ground in a run of 75 ft. and while flying along at a height of 20 ft. was caught in a downward eddy that swirled around the grandstand and tipped him over to the left at an angle of nearly 45 deg., despite his manipulation of the ailerons. He finally recovered his lateral control, but in the meantime lost in the fore and aft direction and the machine, which was probably too lightly built, struck the ground violently and was wrecked. Mr. O'Brien escaped injury.

The machine is 31 ft. spread by 42 ft. fore and aft. Planes 31 by 6 ft., curvature 1 in 32. Weight of frame without power plant, 378 pounds. Weight complete, 820 pounds.

The power plant consists of a Hall-Scott 8 cylinder 60 horse power engine, driving direct a Hall-Scott 7 ft. 6 in. by 4 ft. pitch propeller. The thrust claimed is 285 pounds. A "Sunset" radiator of but 15 pounds weight does the cooling.

The biplane is almost a duplicate of the Wiseman-Peters completely described in this issue, having the same sockets, ribs, struts, control and general dimensions and power plant. As pointed out by the writer in the description of the latter machine, the small camber of the surface necessitates a greater angle of incidence and a correspondingly greater horse power.

Leyland Bryant and Louis Fortney, of San Francisco, who recently completed a large Antoinette type monoplane, wrecked the machine on each of its two trials and are now at work dissembling the remains, having given up active participation in the conquest of the air. They will sell the 60 horse power auto engine with which the machine was equipped.



THE WISEMAN-PETERS AEROPLANE.
1—Shows flatness of angle and plane skids. 2—Running gear; note diagonal struts to skid. 3—Machine in flight, July 24, at Petaluma, Calif. 4—Skid and wheels. 5—Control detail, showing shoulder brace and wheel; also type of sockets. 6—A close view of the rubber shock absorber. 7—The Hall-Scott power plant.

THE STEVENS MONOPLANE

By Chas. E. Schmerber.

THE Stevens monoplane, built by Wm. Stevens, of Los Angeles, Cal., which lacks but the motor to go on its trials, embodies some new ideas in monoplane construction.

Frames. The framework consists entirely of steel tubing, except the ribs and lateral beams of wings. These are hollow wood, wrapped with muslin tape and glue, then wound diagonally with piano wire. All joints are brazed. The body is of hexagonal design properly braced by steel wires equipped with turn buckles.

Planes. The width of the main planes is 32 ft. over all with a depth of 10 ft. tapering to 3 ft. at the tips. Width of rear plane is 9 ft. 6 in., and depth 10 ft. The total length of the machine is 24 ft.

Running gear consists of three caster wheels 26 x 2¼, spread of the front pair being 7 ft. 6 in., all wheels being pivoted with spring suspension.

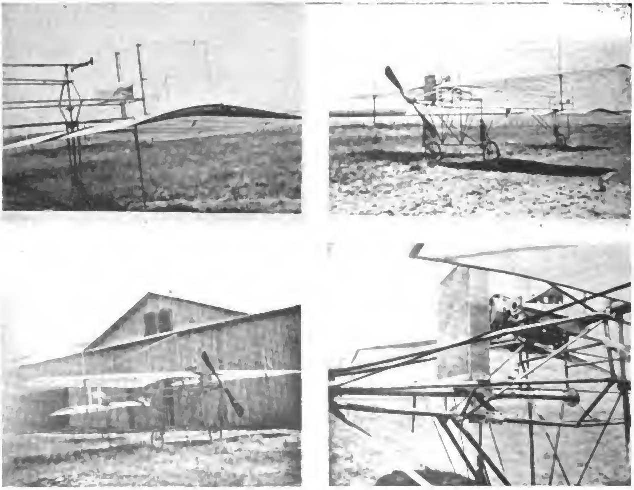
Propulsion. The diameter of the propeller is 8 ft. with 10 degrees pitch. The motor has been built by Buel H. Green, of Los Angeles. The engine is an eight-cylinder set at 90 degrees, "V" type, 50 h. p.; the bore is 100m/m, the stroke is 130m/m. The cylinders are made of high carbon steel, turned from the solid billet, the pistons are low carbon steel with cast-iron rings; the cylinder jackets are of spun copper, and the cylinder heads are water jacketed cast iron; the valves are placed at an angle in the cylinder head, and are operated by a cross beam from the cam-shaft, which has four double throw cams, each cam operates the valves for two cylinders. Connecting rods and crank shafts are made of Vanadium steel, the crank case is aluminum, carrying at each end large annular ball-bearings which support the crank-shaft. F. & S. ball-bearings also are used to carry the cam-shaft as well as for rollers in the valve plungers. Mr. Stevens is also using a special turnbuckle which Green is making for the aeronautic trade.

Both inlet and exhaust valves are of generous proportions, being 50m/m diameter, so as to offer as little resistance to the passage of the gases as possible.

Control. The control of this monoplane embodies some new ideas, the lateral stability being maintained by the main supporting planes in this way: The planes are pivoted in their center of pressure and independently of each other, and can therefore be offset, viz.: one plane can be given a greater angle than the other. The scope of angles is from 3 degrees negative to 18 degrees. Both the elevating and offsetting of these planes is ingeniously effected by the movement of one handlebar in front of the aviator in such manner that swinging this handlebar upwards in a vertical plane gives a larger angle to the plane on that side, thereby righting the machine. By pulling the handlebar on the left towards you, gives the planes an angle of 3 degrees negative and the opposite movement gives 18 degrees positive. As can be seen by the photograph, the aviator sits over the rear plane, back of the rear wheel and just in front of the direction rudder.

The weight of the machine when fully equipped and including aviator will be 1,000 pounds.

The double surface direction rudder is operated by the feet on a cross lever connected up by wires through pulleys.



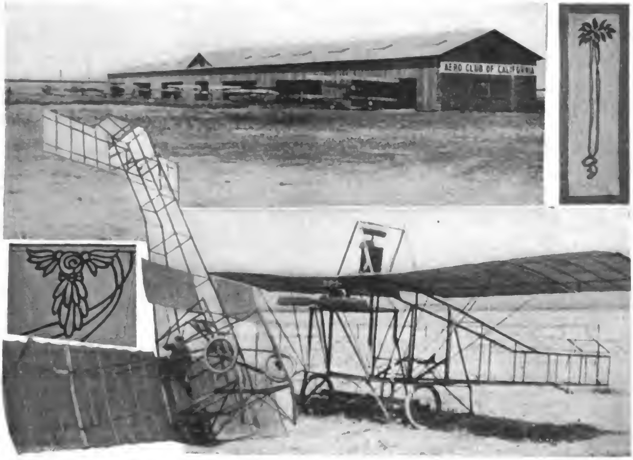
The Stevens Monoplane

AT THE LOS ANGELES AERODROME

By Prof. H. LaV. Twining.

Three machines now at the Los Angeles Aerodrome are endeavoring to fly. J. J. Slavin, with his biplane, has made a flight of 50 ft. The aerodrome is one mile in circumference, thus making it 1,700 ft. in diameter. Part of this distance is taken up by the motordrome track and the inner field fence. This leaves but 1,000 ft. clear space in length. This is too restricted a space for amateurs, as it takes a large part of the distance to clear the ground, and one must alight within a small distance to avoid running into the fence.

A track outside of the enclosure has just been completed. This track is over a mile in length, and Mr Slavin intends to try out his machine on this track on Aug. 5. Slavin's biplane differs from others in the arrangement of the main planes, in order to secure automatic lateral stability. The resistance under one plane causes that plane to shift the opposite plane automatically. The same is true of the fore and aft stability.



The Aero Club of California's Aerodome

The Eaton-Twining Machine

The Eaton-Twining machine has been running around on the ground endeavoring to fly. This machine is a monoplane of the Bleriot type. It differs from that machine in having sliding planes for securing lateral stability, instead of ailerons or warping. The machine is making daily jumps of 10 to 50 ft. On one occasion it rolled over on its back. Warren S. Eaton was driving the machine. The main planes had not yet been put on. In making a turn the machine skidded and turned over sideways, landing on its back. Warren escaped unhurt.

On another occasion the axle broke, and as the machine was traveling some 25 miles an hour, it pitched over on its nose. Warren Eaton was the driver and he again escaped unhurt.

Mr. Slavin's machine is equipped with a Werner motor, made in Los Angeles. It is a 30 h. p. 4-cylinder water-cooled motor. The Eaton-Twining machine is equipped with a Ford automobile engine, "T" model, 4-cylinder water cooled, 22½ h. p. Total weight of power plant is 200 pounds. Weight of machine with aviator is 700 pounds. Up to the present time a thrust of 180 pounds has been obtained at 1,400 revolutions.

George Heussler has built a machine of the Farman type, equipped with a Mitchell automobile engine of 300 pounds weight and 30 h. p. He has been off the ground with this machine and in a try out on July 31 the front control broke. The wind blew it back into his face and cut the bridge of his nose. He escaped otherwise unhurt.

The Greer-Robbins machine is a monoplane of peculiar construction. This machine is equipped with an "N" model Ford automobile engine. It has made a flight of some 95 ft. This machine is probably the second machine belonging to a member of the Aero Club of California to leave the ground, the Gill biplane being the first. The Gill machine is a Farman type so that the Greer-Robbins is the first monoplane invented by a member of the Aero Club of California to clear the ground. There are some ten other machines at the "aerage" in various stages of construction.

Praise for "Aeronautics."

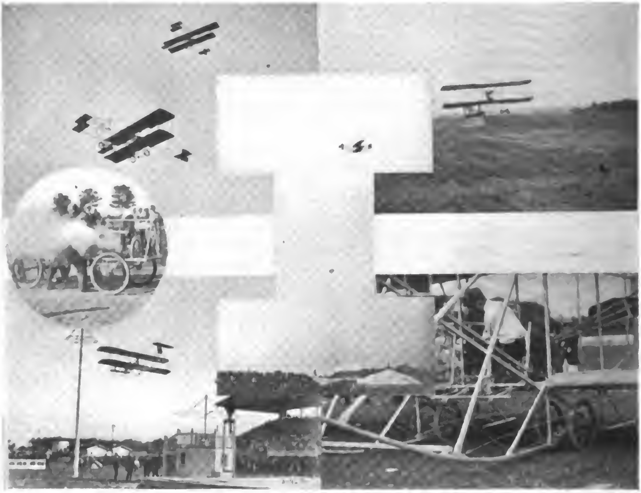
Dear Sir:

I have read your editorial note for July with admiration and enthusiasm, and note your splendid advertising patronage, and its logical nature, with real astonishment. Your periodical has been as complete, world-wide and nearly as wonderful as the triumph of Wilbur and Orville Wright.

I am only a literary man of 60; I have stuck to my trade and have beheld the death of nearly all illusions. Yet the scientific progress since 1876, the phonograph, telephone, the dynamo, spectroscope, turbine, X-ray and radio-activity, and finally the Wrights, have kept me alive to the interesting character of this otherwise unpleasant world. Wonderful! Wonderful! One may be an inquiring little child at 60!

John McGovern,
632 North Central Ave., Austin Station.
Chicago, Ill.

MEETINGS COMING, GOING AND GONE



Curtiss Flies Over Mars at Omaha. Windwagon at Detroit. Brookins Flying at Detroit.

Brookins Just Before his Accident at Asbury Park.

Curzon Flying his Farman at St. Louis Novice Meet. The New Wright Chassis.

Asbury Park.

Aug. 15.—The success of the Wright Meet which opened at Asbury Park, August 10, under the auspices of the New Jersey Aero and Motor Club, was marred on the very first day by the injuring of several spectators when Walter Brookins smashed his machine at one end of the grand stand. The machine used was the first Wright machine to be seen in public with wheels and the flight was the very first one that had been made. The wind at the grounds was very strong and at times the aeroplane almost stood still. Gliding down from a height with the engine shut off, Brookins was just about to touch the ground, so eye witnesses state, but right in front of him were newspaper men and photographers. To avoid these, Brookins, with the little headway he had, turned up again to clear them but he did not have speed enough. Turning the machine quickly toward the most available spot, it landed on its nose and was smashed, and Brookins somewhat hurt. The spectators who were injured, and several quite seriously, were struck by the machine in making its landing. The highest wind velocity between 1:00 P. M. and 6:00 P. M. that day, according to the nearest weather bureau station, at Long Branch, was 21 miles an hour. Hoxsey, immediately after the accident, went up for five minutes, and one of the hot air balloons was sent up.

The Wright aviators at the Meet are: Walter Brookins, Frank Coffyn, Duval La Chapelle, Arch Hoxsey and Ralph Johnstone.

Up to 3:00 P. M. every day there is an exhibition of kite flying given by A. E. Wells with his outfit of all kinds of kites, and by the Signal Corps of the New Jersey National Guard using Eddy kites. Every day that the weather permitted Fred L. Owens has been going up in his dirigible. Johnny Mack gives each day an exhibition of single and double hot air balloon ascents with parachute drops. The field is one of four acres enclosed by a 15-ft. canvas fence.

The accident seemed to double the sale of seats the next day when 10,000 persons were present. Wilbur Wright came on from Dayton to visit Brookins and saw Johnstone and Hoxsey fly, and in a contest, alight in a pre-arranged space.

PARACHUTE JUMPER KILLED

The third day saw the death of Benny Prinz who was killed in making a double parachute drop, the second parachute failing to work. He must have fallen from a height of about 1,000 ft. Two men were in the balloon, Samuel Hartland, and Prinz. Hartland had already cut loose from the balloon and reached the ground safely in the single drop. Governor Fort was present and saw the flights, leaving just before the fatal accident.

On this same day Hoxsey and Johnstone were both in the air at the same time making short turns and dips, and cutting fancy figures. Hoxsey went up to 1,800 feet, the highest that he has yet been.

Johnstone made his longest flight Saturday, remaining up 35 minutes and attaining an altitude of 3,900 ft., the end of his descent being at a sharp angle with the engine cut off. During this flight the dirigible was sailing around and Hoxsey did "stunts" many hundred feet below Johnstone. Coffyn also flew.

Sunday there was no flying and to-day a rain storm prevented. The meet has six more days to run.

Omaha, July 23-27.

By T. T. Tuttle.

The Omaha (Neb.) meeting, on July 23 to 27, was held under the auspices of the Aero Club of Nebraska, and was particularly interesting owing to the fact that every type of craft that navigates or sails the air participated. There were two hot-air balloons, a captive, a free balloon, a dirigible balloon and three Curtiss aeroplanes in the air each day.

The chief attractions, however, were aviators Glenn H. Curtiss, J. C. Mars, J. A. D. McCurdy and Eugene B. Ely.

The weather made it a difficult task for the aviators to open the first day with their best work.

Weather conditions on the second day were about the same as the day before, but in spite of this handicap all aviators made flights. The program closing with a spectacular race between Curtiss and Mars. In the evening the U. S. Dirigible No. 1 left Fort Omaha with Lieut. Haskell in charge and could be plainly seen from the aviation field.

U. S. DIRIGIBLE BREAKS CRANKSHAFT.

About 6:30 P. M., July 24, Dirigible No. 1, with Lieutenant W. N. Haskell, Signal Corps, as pilot, and Sergeant Ward as engineer, started from Fort Omaha, Neb., for the Aviation Field. A good start was made and the balloon rose about 200 ft. in the air—everything apparently working in first-class condition. A couple of circles over the Fort were made and then the balloon was headed for the Aviation Field about four miles away. The conditions were very good with only a slight wind behind the balloon. Shortly after starting and still while over the reservation, the engine stopped due to a break of the crank-shaft. This precluded any further attempt with the dirigible until repairs could be made.

On July 26, captive balloon, No. 9, was inflated in the balloon house at Fort Omaha and towed about 2½ miles across country to the Aviation Field. This was accomplished in 1 hour and 50 minutes. Upon arrival at the Aviation Field the balloon was put in operation and several ascents made between 6 and 7:30 P. M. Mr. Glenn Curtiss made several flights in his aeroplane around the balloon while it was in the air.

On Monday the wind increased in velocity and it was impossible for the aviators to make anything more than short straightaway flights.

NEW SHORT START RECORD.

The government captive balloon was blown loose from its moorings late in the afternoon and landed a mile from the grounds after the rip cord had been pulled automatically when it jerked loose from the winch wagon on the grounds. Many thousands of spectators stuck until the last announcement was made that "wind checks" would be honored the following day at the gate. It was in the face of this wind that Mars rose into the air in his four-cylinder Curtiss 25-30 horse power machine after a run of 53 ft. 7 in., establishing a new U. S. record for short start and earning thereby a silver trophy offered by a local paper.

Tuesday and Wednesday, the fourth and fifth days, the weather conditions were more suitable for good flying, the wind velocity having dropped down in the late afternoon on each of these days. Curtiss, Mars and Ely drove their machines at will and each day Curtiss and Mars raced around the field at a height varying from 100 to 300 ft. The attendance on each of the last two days was more than 10,000. On Tuesday evening the captive balloon was refilled and made an ascent with Mrs. Mars, wife of the aviator, and W. H. Sutton, of the Curtiss company, as passengers.

At the close of the meet Curtiss was awarded by one of the local papers a heavy silver water (?) pitcher for making the most daring and spectacular flight during the meet. This flight was made on the first day of the meet when Curtiss flew out of the grounds and out over the country, which was covered with fences, gulleys and trees, in the teeth of almost a gale.

Pittsburg (Pa.), Aug. 4-6.

By Earl O. Gunther.

The Pittsburg Aero Club held its first meeting Aug. 4 to 6 at Brunot Island race track. There were four biplanes present, three Curtiss and the Baldwin. The aviators were Curtiss, Mars and Capt. Thos. Baldwin. The official timer and recorder was Augustus Post.

The first day of the meet there was only one straightaway flight made, by Mars in a gusty wind of 35 miles an hour.

The second day all three aviators made flights, Mr. Curtiss making the first and most spectacular. His first flight, in a wind of 25 miles an hour, circled the mile track twice, with remarkable skill at balancing in a gusty wind. His longest flight for this day was about six miles. He also made trial for short starting, arising in 81 ft. 2 in., officially measured. The wind was very gusty not allowing very much flying this day.

ANOTHER NEW SHORT START RECORD FOR U. S.

Mars was able to get off the ground in 35 ft., making another new short start record.

The third day of the meet was windy and the aviators were hampered very much by it. Curtiss again made the most spectacular flights, flying out over the river. Mars made a series of short circular flights around the mile track. Capt. Baldwin made only straightaway flights. Great enthusiasm was created by the flights of Curtiss and Mars, Curtiss flying above Mars and in the same direction and at the same time.

The last day of the meet broke all records for crowds at the track and thousands of people were on the surrounding hills watching the flights.

Decatur (Ills.), July 16-17.

Charles F. Willard (Curtiss) flew before good crowds in Decatur, Ills., July 16-17. On the first day he made a cross-country out of the field and back, estimated by local experts as 30 miles, in a flight lasting 40 minutes.

St. Louis Show Date Changed.

The date of the aero show at St. Louis has been changed from October to November 17-24 to avoid conflict with outdoor events on Hempstead Plains.

Toronto, Canada.

There were nine days of flying, participated in by Ralph Johnstone (Wright), Count Jacques De Lesseps (Bleriot), Duval La Chapelle (Wright), Walter Brookins (Wright) and Frank T. Coffyn (Wright), July 8-16, except Sunday. Count De Lesseps flew from the grounds, which were located on the Trethewey Model Farm, about eight miles from the center of Toronto, over the heart of Toronto and back, duplicating his Montreal feat, and once flew to a height of 2,700 ft. Ralph Johnstone made two remarkable flights and seven in all, once battling an extremely high wind at an altitude of 3,400 ft., and on another flight executing all sorts of maneuvers of which the Wright aeroplane is capable, aerial "roller coasting," sharp circles and spirals, skimming the ground, etc. The newspapers divided the honors between Johnstone and Count de Lesseps. Five thousand to fifteen thousand daily was the attendance.

BLERIOT LANDS IN TREE.

The Carruthers "Bleriot," flown by Stratton, ran into a tree. He lost consciousness during his jump and when he came to his senses he found himself in the top of a pine tree 30 ft. from the ground. He said he did not know how he got there. "It was funny."

Samuel F. Perkins, whose specialty is kite and banner flying, filled in all gaps in the program. The banners could be seen from incoming trains and indicated the location of the grounds. Before and during the flight the kites could be seen high in the air. These now are one of the necessities of aviation meetings. Harvard is the next on the list for the kite exhibition. Here he will attempt to lift a man up by kites. It is estimated the pull will be about 1,500 pounds, taking 10 or more 15-ft. kites.

St. Louis National Novice Meet.

BY E. PERCY NOEL.

Although eight machines were on the field the opening day of "First National Aviation Meeting for Novices," July 11, only two got off the ground during the week and the prizes were all won by one man on account of an accident to Howard W. Gill, while practicing on July 12. J. W. Curzon (Farman) won $300 in three prizes by flights made July 14 and 15. There was no competition on July 12, 13 and 15. On July 11 Gill flew 25 yards and landed in a ditch disabling his machine for the day. On July 12 while practicing in the evening, Gill flew half a mile outside the field. Something went wrong with his elevating control and in his inexperience he dropped from 40 ft., smashing half of the machine. He picked himself up but was confined to the hospital for three days.

July 14 was a good day for Curzon, flying 92 yards on his first trial and 113 on his second, winning his debut prize of $100. Later he won the $100 daily prize for the first flight of 200 yards, traveling 322 yards straightway after 113 yards and then touching. Rain interfered on July 15.

On July 16 Curzon made a flight of about 500 yards, winning the $100 daily prize. The meet was continued July 17, but wind prevented flying until after official timing closed, then Curzon flew 186 yards. Curzon and Gill have both made permanent headquarters on the Washington Park aviation field of the Aero Club of St. Louis.

On August 13, Hillery Beachey, flying one of Gills' biplanes without front elevator, made two circuits of the course without stopping, about 1½ miles.

Dr. J. J. De Praslin, of Nicaragua, has ordered material from the Aeronautic Supply Co. for the construction of an aeroplane here.

Chas. Kuhno had a monoplane that was equipped with a Curtiss 8-cylinder 40 h. p. engine that looked very promising, construction and designing above the ordinary.

Robinson's monoplane of the Bleriot type, equipped with a 3-cylinder Elbridge motor, did not get up enough speed to make a getaway from terra firma, although the construction was very good.

Zehler's monoplane was a machine that differs from the general run of flyers, and if you are able to get a photo of it, you could probably understand same better than the maker. Equipped with a 4-cylinder 4-cycle marine engine, it was unable to make a speed of more than five miles per hour.

Sparling's Curtiss type bi-plane, equipped with a 4-cycle Elbridge was very neatly made and looked promising. It was mounted on Farman type running gear.

Curzon's "Farman" biplane seemed as though it had seen better days, although of the standard type of a past season was still in the ring. The big Vivinus motor does not give power enough to enable the machine to make extended flights. Those made have been but short ones.

SEVEN AEROPLANES SMASHED BY WIND.

A few days after the Novice Meet at St. Louis, a terrific storm blew down the tent which housed the aeroplanes, demolishing 7 machines. Nothing was saved of Curzon's Farman but the engine and propeller. Howard W. Gill's machine was unharmed as it was housed in a wooden shed.

Detroit.

At Detroit, La Chapelle, Hoxsey and Brookins made sensational flights and delighted the management and large crowds. The Wright machines will return to Detroit in September.

Lexington, Ky.

J. A. D. McCurdy filled the Curtiss date at the Lexington, Ky., State Fair, Aug. 7-13, making several flights each day of the exhibition.

Grand Rapids.

Mars (Curtiss) was to have flown here July 16-17, but the high wind prevented flights both days.

New York, Aug. 19-21.

Glenn H. Curtiss, J. C. Mars, J. A. D. McCurdy, C. F. Willard and Eugene Ely are scheduled to give a 3-day exhibition at the Sheepshead Bay racetrack, New York, Aug. 19-21.

Eugene B. Ely, a Curtiss aviator, began practicing at Sheepshead Bay racetrack in preparation for the exhibition on the 19th, using for the first time the 8 cylinder Curtiss engine which is slowly being installed in all the exhibition machines.

J. A. Douglas McCurdy, former member of the Aerial Experiment Association, who with F. W. Baldwin, another member, formed the Canadian Aerodrome Co. at Baddeck, Nova Scotia, has signed a contract with Glenn Curtiss to fly a Curtiss machine. His first appearance was at Omaha, July 23-28. From there he went to Lexington, Ky., Aug. 7-13. Eugene Ely of Portland, Ore., who has been flying a Curtiss machine for E. Henry Wemme, Curtiss agent of that city, is another addition to the Curtiss troupe of aviators.

Augustus Post, former secretary of the Aero Club of America, has bought a Curtiss machine under a special arrangement, and will fill exhibition contracts wherever they do not conflict with Curtiss' interests, or will fill engagements obtained by Curtiss. He will begin practicing under the able tutorship of Charles F. Willard, using a machine which Willard has been putting in shape in the Aeronautical Society's shed at Mineola.

Clifford B. Harmon has ordered a fast machine from Glenn Curtiss, in which it is expected he will install his Gnome engine for trial.

Harvard Aeronautical Society to Hold Aviation Meet Sept. 3 to 13.

The Harvard Aeronautical Society, of Cambridge, Mass., will hold an aviation meet at Atlantic, Mass., from Sept. 3 to 13th, inclusive, with the exception of the two Sundays intervening. The programme of events and prizes already scheduled are as follows:

Speed: 1st, $3,000; 2nd, $2,000; 3rd, $1,000. Altitude: 1st, $3,000; 2nd, $2,000; 3rd, $1,000. Duration, $2,000 and $1,000. Distance, $2,000 and $1,000; Slowest Lap, $1,000 and $500. Getaway, $100 and $50. Accuracy, $500 and $250.

$10,000 PRIZE.

To which must be added the premier event of the meet, for which the Boston *Globe* offers a cash prize of $10,000; the condition of this contest being a flight from Atlantic to Boston Light and return against time. For novices there will be additional events and prizes.

A large number of entries from the ranks of the leading aviators of America, England and France have already been received by the Society, assuring the success of the meet, which is not only the first to be held in New England, but by far the most important attempted in America up to the present time. Additional entries will be received and full detailed information furnished prospective entrants at the temporary headquarters of the Society, No. 164 Washington St., Boston, Mass.

The grounds cover 500 acres, on Dorchester Bay, and are surrounded on three sides by water.

SPECIAL $5,000 PRIZE.

The announcement of a $5,000 prize and the Harvard Cup is offered the aviator who, during the meet, makes the best record in dropping bombs on a battleship model, which is to be set up on the field, marks that event not only as one of the most interesting of the meet, but one which the Society deems most important from the standpoint of scientific investigation.

Bennett Race Changed to Belmont Track.

There are 10 entries in the Gordon Bennett aviation race to be held at Belmont racetrack, near Jamaica, L. I., during the week of Oct. 15-23. As follows: France, 3; Italy, 1; England, 3; and America has the naming of 3. France is the only country which has named her representatives, as follows: Alfred Leblanc (Bleriot), who was a contestant in the 1907 Gordon Bennett balloon race from St. Louis; Hubert Latham (Antoinette); Rene Labouchere (Antoinette).

Plans for the meet, and the events which are promised to be held in addition during the week, have apparently not developed very far as yet. Not a single announcement of prizes has been made, and it is now very late for foreigners to figure ahead. Unless announcement is made very shortly, aviators of other countries will have made their arrangements for that period at various European meets.

Following on the heels of a disagreement with Gage E. Tarbell, who was the Aero Club's general manager for the meet, Belmont racetrack was made the place for the Gordon Bennett aviation race and other events, instead of Hempstead Plains as at first planned. L. L. Gillespie stated to-day, Aug. 15, that the amount figured to be necessary, $110,000, had all been raised. "This will be the biggest meet of the year," Gillespie said, "$50,000 being offered by the committee in prizes"; and that the magnitude of the affair will be such that no aviator, American or foreign, whether for financial reasons or for the sake of glory, can afford not to take part. Referring to the rumors that Curtiss might not be on hand to defend the cup by reason of the fact that arrangements are alleged to have been made that the Wright company shares in the gate receipts, Mr. Gillespie said that Curtiss would, of course, be asked to take part, but that the acceptance of the invitation was up to Curtiss and he could do as he liked.

The meet will be financed by the Aero Corporation, Limited. August Belmont has been chosen president of the meet. The executive committee is composed of the chairmen of the various committees, as follows: L. L. Gillespie (Finance Committee), Allan A. Ryan (Arrangements Committee), J. C. McCoy (Aviation Committee), and Andrew Freedman, chairman.

Five Wright aviators will fly, and it is expected eight or ten foreigners will appear.

At the Aero Club of America no information could be had as to the foreign contestants.

FAST WRIGHT MACHINE.

The Wright company is building a special racing machine which may be entered to defend the cup. At the same time, Curtiss is also working on a machine designed to be capable of beating the speed expected to be made by others in the Gordon Bennett. It is very likely that to defend the cup successfully a machine will have to go 70 miles an hour. The 100 h. p. Bleriot made 68 m. p. h. at Rheims in July. Clifford B. Harmon has ordered a Bleriot, in addition to his Curtiss.

Clifford B. Harmon Adds $1,000 to Times Race.

Clifford B. Harmon, chairman of the national council of the Aero Club of America, has offered $1,000 in cash or plate to the contestant in the Chicago-New York race who first covers 500 miles in the first 50 consecutive hours.

Gordon Bennett Balloon Race.

Six countries have entered 14 balloons in the Gordon Bennett race on October 17, as follows: France 3, Germany 3, Italy 2, Switzerland 2, Denmark 1 and U. S. 3. Only the German entrants have been named to date. They are: Hauptmann Von Abercron, who was in the 1907 Gordon Bennett at St. Louis, Lieut. Vogt, Ing. Hans Gericke.

In the elimination race to pick the American team, Sept. 17, Alan R. Hawley and Post will have one balloon, C. B. Harmon and Capt. Baldwin a second and possibly A. H. Forbes will be sufficiently improved in health to take part. A. T. Atherholt from Philadelphia will be another. St. Louis is likely to have more than half a dozen entrants. A. B. Lambert is sure to go in, G. L. Bumbaugh, St. L. Von Phul, H. E. Honeywell and W. F. Assman are strong probabilities.

Aero Calendar for the United States.

Aug. 10-20—Asbury Park, N. J., Wright aviators, Owens dirigible, etc.

Aug. 17—Warehouse Pt., Ct., Chas. F. Willard.

Aug. 19-21—Sheepshead Bay, N. Y., Curtiss exhibition, with G. H. Curtiss, Willard, Mars, Ely, McCurdy, Post and Baldwin.

Aug. 20—Quincy, Ill., flights by Lincoln Beachey.

Aug. 23—Bradford, Pa., C. F. Willard at Elks' Carnival.

Aug. 26—Curtiss to fly from Cleveland to Cedar Point and return, over Lake Erie, about 60 miles each way.

Sept. 3-13—Boston aviation meet of Harvard Aeronautical Society. Curtiss, Willard (Curtiss), Wright machines and others.

Sept. 5-9—Hartford, Ct., Wright aviators.

Sept. 5-10—Minneapolis, Minn., Wright aviators.

Sept. 5-10—Hamline, Minn., at State Fair. Wright aviators and J. C. Mars (Curtiss).

Sept. 5-10—Lincoln, Neb., Wright aviators.

Sept. 6-10—Parkersburg, W. Va., Wright aviators.

Sept. 12—Syracuse, N. Y., State Fair. J. A. D. McCurdy (Curtiss).

Sept. 12-16—Milwaukee, Wis., one Wright machine.

Sept. — —Flights at Mexico City.

Sept. 12-17—Rock Island, Ill., State Fair. J. C. Mars (Curtiss).

Sept. 17—Indianapolis, Ind., elimination race to select representatives in Gordon Bennett balloon race.

Sept. 19-24—Detroit, Mich., Wright aviators.

Sept. 21—Olean, N. Y., State Fair, flights by McCurdy (Curtiss).

Sept. 22-28—Knoxville, Tenn., Wright aviators.

Sept. 26-30—Trenton, N. J., Wright aviators.

Sept. 27-30—Rochester, N. Y., Wright aviators.

Sept. 26-Oct. 1—Helena Mont., State Fair, J. C. Mars.

Oct. 1-8—Springfield, Ill., Wright aviators.

Oct. 1-7—Sedalia, Mo., Wright aviators.

Oct. 3-8—Spokane, Wash., State Fair, J. C. Mars.

Oct. 15-23—Belmont Park, L. I., aviation meet of A. C. A., including Gordon Bennett aviation race, latter on Oct. 23.

Oct. 17—St. Louis, Mo., Gordon Bennett balloon race.

Oct. ——St. Louis, Mo., aviation meet.

Oct. 22-Nov. 5—Philadelphia, Pa., aero show of Penn. A. C.

Nov. 17-24—St. Louis, Mo., aero show, Coliseum.

Dec. 1-8—Aero show of A. C. of Illinois.

Simple Conditions for N. Y.-St. Louis Prize.

Official announcement of the stringless prize of the New York *World* and the St. Louis *Post-Dispatch* has been made, and follows:

The New York *World* and the St. Louis *Post-Dispatch* will give $30,000 to the first aviator who, between Aug. 15, 1910, and Jan. 1, 1911, flies from New York to St. Louis or from St. Louis to New York within 100 consecutive hours, using the same aeroplane from start to finish.

The only condition attached to this offer is that at least three days' notice of intention to start for this prize must be given to either the New York *World* or the St. Louis *Post-Dispatch*, in order that announcement may be made of the actual starting and finishing points, the approximate route and other details as agreed upon.

Book Note.

Aerial Locomotion, by F. H. Wenham, and *Aerial Navigation*, by Sir George Cayley, are the first two of the "Aeronautical Classics" which have been gotten out by the British Aeronautical Society under the editorship of Messrs. T. O'B. Hubbard and J. H. Ledeboer. The other four of the set will be published during the year. These cost but a shilling each, and may be had from King, Sell & Olding, 27 Chancery Lane, W. C., London.

AT THE MINEOLA AVIATION GROUNDS

NEW CURTISS AEROPLANE

Willard Carries Three Passengers

THE NEW BALDWIN

Walden Accident

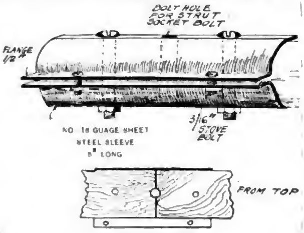
THE new Curtiss biplane, built especially to specifications of Charles F. Willard, the assembling of which was completed at the Aeronautical Society's shed at Mineola, L. I., the 11th of August, differs from the standard Curtiss machine only in size and minor details of construction. The accompanying drawing gives complete measurements:

Main Planes.—These are 32 ft. spread by 5 ft. fore and aft, spaced 5 ft. apart. The other Curtiss machines spread 26 ft. 3 in. by 4½ ft. the other way. The main cell is divided into five sections for shipping purposes. These sections of the lateral beams join as shown in the following sketch: The curve of the ribs is 1 in 20, the deepest point 3 in., coming 18 in. back from the front edge. The Baldwin rubberized linen covering, placed on top of the ribs, is made in panels 5 ft. by 6 ft. (5 ft. by 8 ft. in the center panel) and laced to the large ribs (which come at strut points) through holes therein. The cloth is tacked on top of the intervening smaller ribs with large-headed brass tacks through a strip of black tape. The whole main cell is stayed in the usual manner with Roebling "aviator" cable. All ribs, even in the ailerons and rudders, are laminated ash and spruce. The spruce lateral beams of the main planes are solid. All ribs and beams of rudders and ailerons laminated ash and spruce.

Rudders and Other Surfaces.—There is the usual double plane horizontal rudder, or "elevator," in front, spreading 7 ft. by 27 in. by 27 in. The surfaces of this are double—i. e., the cloth is on both sides of the ribs. The same is true of the vertical rudder in the rear, 3 ft. high by 30 in. the other way; and the fixed horizontal plane in the rear, measuring 7 ft. by 30 in. The latter has a slight curve, the depth of which is ¾ in. at a point one-third back. The elevator has the same curve running back from the front edge, but is cut off at 27 in.

Stability.—This is secured by ample-sized "ailerons," 10 ft. spread by 2 ft. 9 in. length. Instead of having the customary two wires (L), top and bottom, running to one point, joining, and thence over the pulleys to the shoulder brace, double-sheave aluminum pulleys are used and both wires run around the sheaves and then join, giving additional strength.

The control cables from the ailerons run through pulleys on top of the lower plane and under the upper plane to the hinged steel tube back of shoulder brace. Leaning to the high side of the machine when it tilts pulls the aileron on the low side down (and on the high side up), increasing the lift on the low and decreasing it on the high.


BOLT HOLE FOR STRUT SOCKET BOLT
FLANGE 1/2"
NO. 18 GUAGE SHEET STEEL SLEEVE 8" LONG
3/16" STOVE BOLT
FROM TOP

Beam Connection

Steering.—Steering up or down is by the usual movable column; pushing forward steers down, and pulling back steers up. A bamboo rod runs from the column to a short mast at the front edge of the elevator for this purpose. The vertical rudder control cables run over pulleys at the end of the

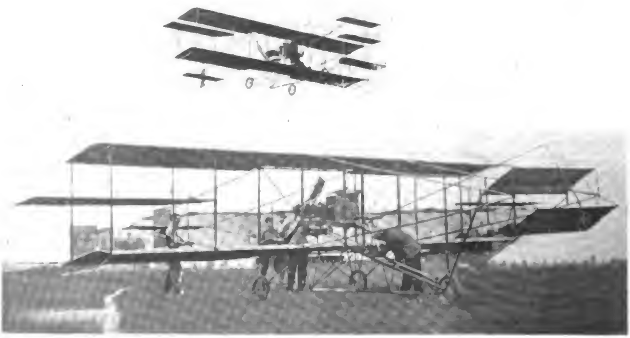
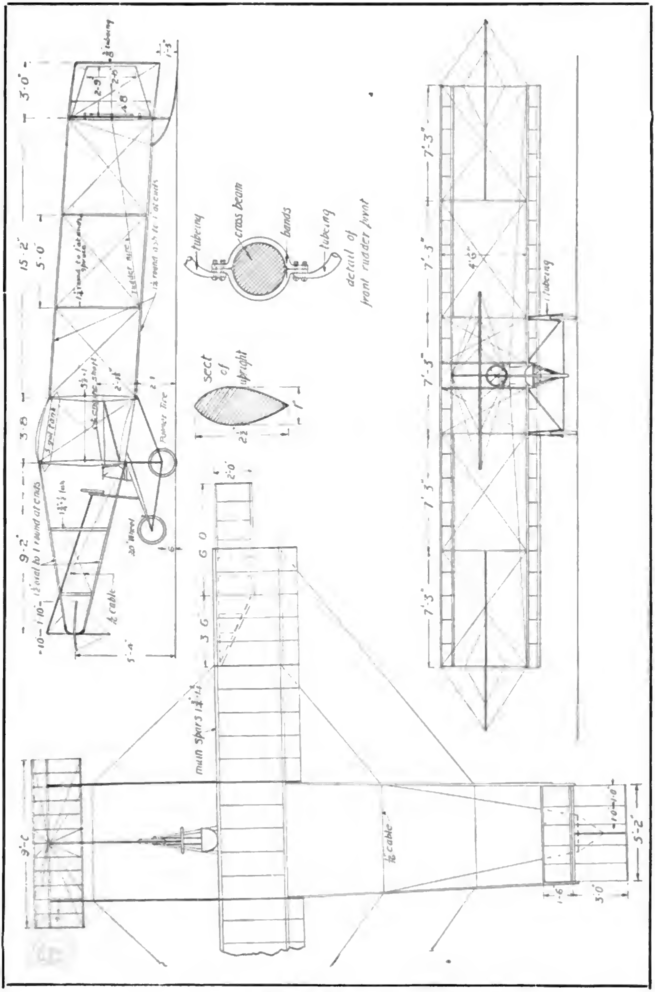


Photo by Joseph Burt, Mineola, L. I.

Chas. F. Willard in first flight with big Curtiss machine. The inserted picture is a close view of same.



Capt. Baldwin's Machine

together by sleeves of steel tubes. The ribs are of "I" cross section, the horizontal strips ⅞ in. wide, the whole rib tapering front and rear from 3 in. at greatest height. The vertical part of the rib is bored full of holes throughout its length. The strips on top and bottom are screwed and glued on. The ribs follow a parabolic curve from the front beam to the rear edge. For 9 in. forward from the front lateral beam the surface narrows to a point. The greatest depth of the curve is 4¾ in. at a point one-third back from front edge.

Tail Plane and Elevator.—At the rear is a fixed surface of 15 sq. ft., with a movable section at either lateral extremity, both totaling another 15 sq. ft. These are curved in the same ratio as the main plane. These latter pivot about a lateral steel tube one-third back from forward edge. From a short mast running through each of these wires run along the "fuselage" and over the pulleys over the front wheel and fasten to the steering column. Pushing forward on the steering column steers down, and vice versa. All surfaces are covered both sides with Naiad linen.

Rudder.—The vertical rudder has a surface of 7½ sq. ft., and is operated by turning the steering wheel left or right.

Stability.—A new scheme for automatic lateral stability has been devised and patented. This consists of small planes inclined at an angle of about 45 degrees, placed on a rectangular frame on top at the extremities of the main surface. Each small plane is hinged near (H) its rear and near the forward end is a spring (S). If the machine starts to slide to one side or the other, the increased pressure is designed to cause the front end of the little plane to raise up against the spring's pull and present a greater angle to the wind. The spring holds the plane normally egde into the wind. This is illustrated herewith.

Power Plant.—An Anzani three-cylinder air-cooled motor of 25-30 French h. p., mounted or hung in a frame of tubing, placed below the rear lateral beam, drives direct a 6-ft. propeller. One of those used was a Requa-Gibson of 4-ft. pitch, and the other a Brauner of 4-ft. 3-in. pitch. There is no throttle to regulate the G. & A. carburetor, but a lever on the engine is utilized to lift the valves, permitting, when occasion demands, the propeller to turn perfectly free, with no explosion taking place. The moment the lever is let down again, the motor starts its usual work. This compression release is operated by the left foot. On the steering wheel is a spark cutout. The spark advance is on a right-foot pedal. Coil and battery ignition.

Chassis.—The running gear has for diagonal struts steel tubing pinned and brazed in sockets. The horizontal members connecting the hubs of the three wheels are of spruce. The axle of the two rear wheels is of angle steel.

The wheels are of Weaver make, 20 in. rear and 16 in. front, fitted with Hartford aviator tires.

The *fuselage* is made up of spruce, with steel sockets, stayed with piano wire. In the next machine, which is to be finished by Sept. 1, this will be built of ash and stayed with Roebling aviator cord. The aviator's seat is suspended by piano wire.

The Month Past at Mineola.

Nearly every day during the past month flights have been made by Harmon, Baldwin, Russell and Joe Seymour. J. J. Frisbie on two Sundays made hot air balloon ascents and parachute drops.

MANY MACHINES ON THE GROUND.

Dr. William Greene will soon have one of his biplanes down at the Aeronautical Society's shed for flights.

The machines in the Aero Club sheds are: Clifford B. Harmon (Farman), Capt. T. S. Baldwin (Baldwin), W. L. Fairchild (own monoplane, building), H. S. Harkness (Antoinette), and Philip W. Wilcox (Farman-type). At the Aeronautical Society sheds are: Miss E. L. Todd (biplane, not yet tried), W. Diefenbach (making), Frank Van Anden's light Farman-type with Harriman engine, Geo. Godley (imitation Curtiss, making), Dr. H. W. Walden (monoplane with Anzani motor, recently damaged at trial), M. P. Talmage (making Curtiss-type), G. E. De Long (Shneider make of Curtiss type, with Elbridge engine), Jas. Murgatroyd (biplane own design, with two Adams-Farwell motors operating individual propellers, not yet tried), George Rossell (one Curtiss with Harriman engine and one copy, former making almost daily flights), Elmer Burlingame (own design monoplane, Harriman engine, not yet tried), Louis Rosenbaum (monoplane, owner's design, not yet finished), Edwards & Edick (small copy of Curtiss, well built, own make of engine), Paul Kilduchevsky (monoplane, owner's design, making).

The Society has added an extension 30 by 138 ft. to its already large shed to accommodate some of the machines which have been housed under tents.

AVIATORS SHARE PROFITS IN GATE RECEIPTS.

Some time ago the owners, a real estate concern, of the lands over which the flights are made, built a fence on three sides and began charging the public admission to a grandstand and the field. On Aug. 13 there was established a system of "points," each machine making an appearance on the field earning 1 point, a short jump a certain number, length of flight is rewarded, etc. The aviators share in profits according to the points earned. The two aeronautical organizations have nothing to do with the financial end of the enterprise, merely leasing shed ground and privilege of flight over the other lands. Each Saturday and Sunday large crowds view the flights of Harmon, Baldwin, Russell, Seymour, etc. Mr. Harmon objects to accepting money prizes and takes a cup or trophy instead.

PATENT LIST

Theodore Kornbrodt, Chicago, Ill., 962,964, June 28, 1910, filed Oct. 28, 1909. AIRSHIP. A dirigible balloon having an elongated air bag semi-circular in form which is inflated with heated air from the exhaust pipes of several engines. A plurality of propellers provide the motive force while the steering is performed by a "resident element" acted upon by an air blast from a tube at each end of which propellers are arranged.

August Richard Rieger, Chicago, Ill., 962,977, June 28, 1910, filed Sept. 9, 1909. AIRSHIP. A chassis of tubular form on wheels, provided with a motor operating a propeller at the front which is adjustable as to the plane of rotation. Reciprocating wings extend at each side and in addition gas containing cylinders are provided at each side to sustain a portion of the weight. The cylinders are movable back and forth to maintain equilibrium.

Thomas Mortimer Crepar, Fargo, N. D., 963,522, July 5, 1910, filed June 2, 1908. FLYING MACHINE, the main characteristics of which are a plane of corrugated form, instead of the usual flat surface, pointed at the front and diversing outwardly and down at the sides. A series of vanes are disposed on the plane adapted to be moved simultaneously at various angles and a spiral propeller supplies the motive force.

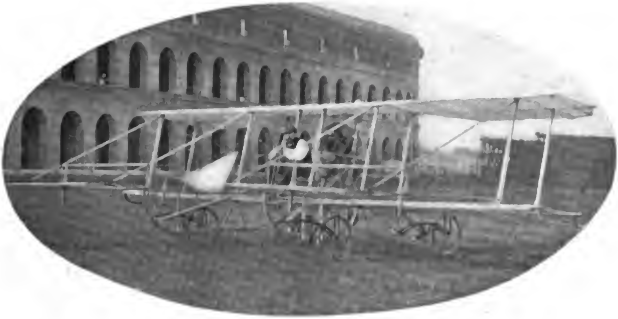
Harold M. Chase, and Minor F. H. Gouverneur, Wilmington, N. C., 963,516, July 5, 1910, filed March 17, 1910. STABILIZING MEANS FOR AEROPLANES. A biplane provided with vertically arranged partitions located between the planes extending longitudinally of the machine. The rear portions of said partitions are movable manually.

Gerald Geraldson, Newcastle, Cal., 963,543, July 5, 1910, filed May 14, 1909. AEROPLANE formed by stretching material over a continuous rim which may be elliptical in shape. A transverse rod passing substantially through the center of the ellipse secured at each end to the rim, serve as the supporting means by pivotal connections to standards rising from the car. Means are provided for changing the angle of the plane and also the standards relatively to the car.

FLIGHT PROGRESS OVER THE COUNTRY

Flights With Burgess Aeroplane.

William Hilliard has been making a constant succession of flights with one of the Burgess Co. & Curtiss machines at Plum Island, Mass., having flown on one day alone 25 times without breaking even a rib or skid. The company's energies are being devoted to the Model C "Flying Fish" which is to have wheels as well as skids and to be driven by a Clement-Bayard 30 h. p. motor. The company has hitherto employed two different types of propellers designed by A. M. Herring, two designed by Mr. Pfitzner and two Chauviere. A new propeller is being developed to have the good points of these without the defects. This will be of the 2-bladed type with uniform pitch and as symmetrical as the highest efficiency will permit. The general design will be adapted to different diameters, the standard diameter for light machines being 6½ ft. The Pfitzner monoplane, now the property of the company, is at Garden City for sale at $4,000, with a Curtiss 4-cylinder engine.



The control device is novel in the "Harvard I." There are two elevators in front, each operated by separate levers at the right and left hand of the aviator. In ascending or descending, both are moved to the same extent, but one or the other is moved individually to maintain lateral equilibrium. The levers lock automatically on being released. The vertical rudder is regulated by the operator's foot. The motor and direct-connected propeller is swung in a revolving cradle, with the axis of support passing through both the center of gravity and the line of thrust of the motor. By a simple movement of either hand or foot the operator can adjust the thrust angle at will. The device is self-locking and free from vibration. The norm of the line of thrust passes through the aeroplane's center of pressure. Detachable wheels equipped with spring shock absorbers are attached to the skids.

The "Harvard I" was designed, patented and flown by James V. Martin, manager of the society.

Navigates Over New York.

Thousands of residents of the village of Manhattan were startled on the evening of July 19 when Frank Goodale operated his dirigible balloon from Palisade Park across the Hudson to Broadway and then down around the *Times* building and return. The distance is about 10 miles.

Harvard Biplane Flies.

The Harvard Aeronautical Society, numbering 400 members, lays claim to having the lightest biplane in the world, its weight being but 165 pounds, including wheels, but without engine.

The riding surface is 200 sq. ft. and the control surface 35 sq. ft. Equipped with disappearing wheels and offset surfaces, it is constructed of hollowed and laminated air-dried spruce without bolts, screws or nails. The after cross-piece is on top of ribs, while the fabric is underneath the ribs.

The machine, which was built by S. L. Saunders and certain Harvard students, has made several 125-yard flights within Soldiers' Field, fitted with a regular Cameron 4-cylinder, air-cooled automobile engine, at a height of 8 or 10 ft. However, the engine was not developing more than two-thirds of its horsepower and weighed with equipment 250 pounds. The engine itself weighed 196 pounds. The propeller was a Herring four-bladed, giving 200 pounds thrust at 1,200 r. p. m.

Trans-Atlantic Airship Ready Soon.

The Wellman polar airship, "America," is being assembled at Atlantic City, N. J., and before long trial ascents will be made. Previous to the cross-ocean attempt the ship will be navigated to Philadelphia and New York, it is promised.

Flight up York State.

Bath, N. Y., Aug. 16.—Fred Eells, who has been making several short flights in the Kirkham-Eells biplane here for the last week, this morning made a flight of one and one-half miles at a height of 75 ft., making a complete circle and returning to starting point. The machine is a biplane with a new system of control and is equipped with a 25-30 horse-power 4-cylinder Kirkham aero motor. A complete description will appear next month.

The **Nashville Aero Club** seems to be another "fly-by-night" club, as letters addressed to it as well as individual officers are returned by the post office. A chance for the national council of the Aero Club of America to do some work. An exhibition was recently held in Nashville.

IN THE AERIAL MARKET PLACE

TO OUR FRIENDS — We would appreciate it very much if you would specify in writing advertisers that you saw the ad. in AERONAUTICS. This will help us, and eventually be of equal service to yourselves.

Detroit Aero. Construction Co. Motor.

The Detroit Aeronautic Construction Co. of Detroit, Mich., realizing some time ago that the present type of automobile or marine motor was entirely too large, heavy and cumbersome for aviation work, set about to build the smallest, lightest and most effective power plant which could possibly be constructed. Its 30-40 h. p. motor weighs well inside of 175 pounds, including a double ignition system, carburetor and propeller.

In order to secure efficient service, ball bearings are used wherever the same are at all practicable or applicable.

With the exception of the cylinders, pistons and crank shafts, the entire motor is built of aluminum, including the Schebler carburetor, which is being made especially for this motor, thus reducing the motor to the very minimum of weight without sacrificing strength in any way.

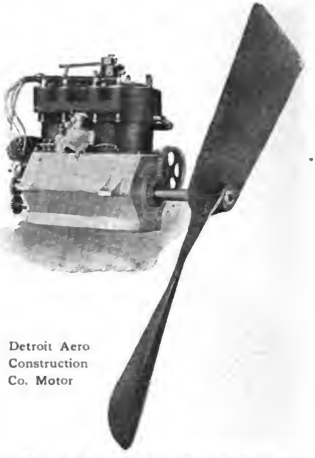
The company has no hesitancy in saying that, in so far as size is concerned, it is building the most compact motor, for the power developed, in the world, the 30-40 h. p. motor occupying but about 18 by 19 in. of space over all.

The cylinders on all motors are cast *en bloc*. The crank shafts are cut out of solid blocks of chrome nickel steel, and are carried on two large Hess-Bright ball bearings. All rotary parts are thoroughly balanced and in every way made as light as possible, without sacrificing strength for lightness. The intake, as well as the exhaust valves, are made especially large, to insure perfect intake of fuel, as well as absolute scavenging of cylinders. In the construction of the intake valves and manifold, the company has gotten away from the adopted form, and has adopted a system of its own, which is unique in so far as compactness and simplicity are concerned. The exhaust is effected by a peculiar cam operation, giving an easy rotary movement, combined with quick action, and is "fool-proof."

The company has also gotten away from the ordinary in its oiling system, which consists of a very small rotary gear pump built in the crank case, so as to be easily accessible in case a repair should be necessary. This forces the oil to all cylinder and connecting-rod bearings. The oil being pumped from a sub-base to the cylinders and to the crank case makes a splash system, a lever overflow pipe to the sub-base taking care of all excess oil.

Years of experience in building motors for racing boats has taught the company that in order to secure absolute ignition its motor must be equipped with a double ignition system. This system consists of a Bosch magneto and of a primary and secondary distributer with a single coil, and it is the claim of the company that it has the only perfect ignition system in present use.

The company states: "That the motors built by this company are a success is proven by the many orders which it has received from persons who have spent much time and money in experimenting with other motors, and who have discarded the same for the Detroit motor, and have found perfect success with it. References as to successful users of this motor will be gladly furnished by the company on application."



Detroit Aero Construction Co. Motor

The company is now making arrangements for the building of a larger factory, in order to enable it to take care of its rapidly increasing business. Orders for more of the latest improved machines have already been placed, and negotiations for the building are now in progress. The company is always glad to see prospective customers and have them examine the plant and the motor. All motors are furnished with either aluminum flywheels or laminated wood propellers.

Hall-Scott Aeronautical Motor.

Two types of aerial motors of light weight are offered by the Hall-Scott Motor Car Co. of San Francisco, Cal., this concern having already delivered a number of them to western aviators.

One of the interesting facts about the successful flight of the Wiseman-Peters aeroplane at Petaluma was the use of a Hall-Scott eight-cylinder, 60 h. p. motor. Al Hall, the designer, is best known as an automobile man, being well known locally as the builder of the Comet automobile, which made all kinds of records on local California tracks for two seasons.

These engines are both of the four-cycle type, water-cooled; a four-cylinder, 30 h. p. and an eight-cylinder 60 h. p., both having cylinders measuring 4 in. bore and 4 in. stroke, and with the exception of the crank shaft and crank cases all the parts on both types of motors being interchangeable.

The cylinder walls, pistons and heads are made of a special cast iron. The valves, of nickel steel, are seated directly in the removable heads and operated by push rods and rocker arms. The water jackets are of spun copper, a by-pass between the jacket and cylinder head being used as a preventative of any leakage into the cylinders.

The cam shafts are located in the crank cases, which are of the strongest known aluminum alloy. The crank shafts and connecting rods are machined from hand forgings of a low carbon machine steel, which it is claimed is best adapted to use where a propeller is employed, bored and milled and ground accurately to size. Main and connecting rod bearings are of larger size than ordinarily used, being 1¾ in. in diameter.

The crank cases are split, the bottom oil cases having an oil reservoir cast integral, from which a gear pump draws and keeps the oil in continuous circulation, constant level splash system of lubrication being used.

A ball-bearing thrust collar, integral with crank case end, is arranged to take a thrust in either direction, so that a push or pull propeller may be used.

Ignition is by Bosch high-tension magneto, and a special aluminum Stromberg carburetor is regular equipment.

This company claims simplicity of construction and design, with as much lightness for the power developed as any other water-cooled motor that will stand up under the hard usage that an aeronautical motor has to contend with.

In addition to these motors this concern offers laminated elm and mahogany propellers, which they believe have original lines, and which they claim give more thrust for the horsepower expended than propellers of other manufacture. Using a 6-ft. blade on their 30 h. p. motor, they claim a thrust of 220 pounds at 1,100 revolutions, and with an 8-ft. blade and their 60 h. p. motor a thrust of from 330 to 380 pounds at 1,200 revolutions.

They are also prepared to furnish radiators of light weight, but with liberal cooling surface, in two types, a 30 h. p. weighing 14 pounds and a 60 h. p. weighing 30 pounds.

The Detroit Rotary Motor.

The Michigan Airship Co. has been formed in Detroit, Mich., to make and distribute a new rotary engine, called the "Rotaero." It is claimed by the makers that in this motor many of the aims of the engine designer, great power with little weight, long life, simplicity, accessibility, freedom from repairs, etc., have been accomplished.

DESCRIPTION BY FREDERICK WEINBERG.

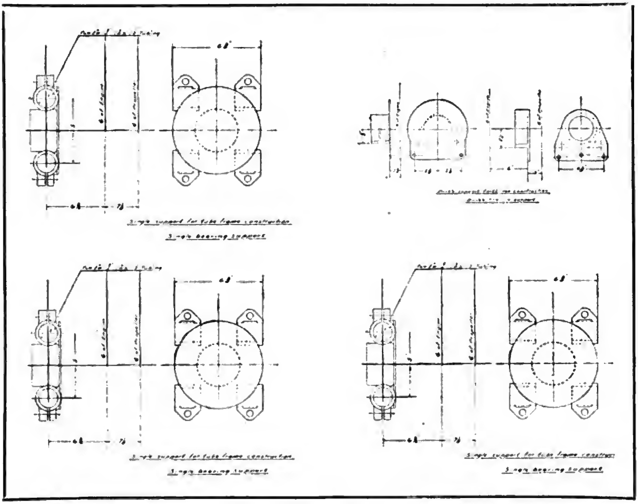
The engine is a 1-cylinder in principle, which has been divided into two perfectly balanced units, and the different working phases of the cycle, as charging, compressing, explosion and expansion, occur in both units exactly at the same time but in opposite directions. This relieves the center of the engine from any bending strain under normal conditions.

Adverse criticisms have been made against the multiple type of rotary engine for the simple reason that it requires a man of thorough technical knowledge to locate ignition troubles. In the revolving 1-cylinder type the difficulty of locating the ignition troubles of the multiple cylinder rotary type is being eliminated, as both sparks must occur simultaneously in the same place, which is not the case in a multiple cylinder type of engine.

This engine has been designed in accordance with the 2-cycle principle, because a 2-cycle engine gives more power for a given weight than the 4-cycle, and eliminates in the present design the intake valves entirely, and simplifies the electrical or mechanical timing arrangement to a great extent.

In the present design the so-called, "straight-line" clearance has been introduced which is even of a greater volumetric efficiency than the 4-cycle principle, inasmuch as there is no non-scavenging space above the piston in which the burnt gases can possibly remain, which is often the case in the imperfectly designed valveless 2-cycle engines. The new charge, by aid of the crank case compression, fills the cylinder through the by-pass on the very lowest point and leaves through the head valves after the expansion stroke, and inasmuch as carburetor intake and exhaust ports are located in a radial direction to each other, the centrifugal force plays a very prominent role in the process of charging and discharging, helping to throw the charge into the crank case, transferring the same from there into the cylinder and after the expansion stroke into the air.

The engine may be mounted hanging from one bearing like the French Gnome motor, or it can

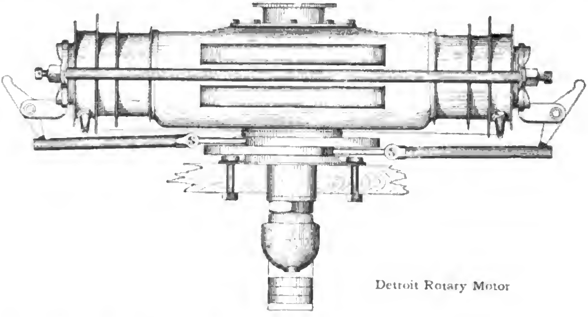


Detroit "Rotaero" Motor

preferably be located between two bearings while the propeller swings outside the front bearing.

The pistons describe a true circle around the wrist pins and form, during a half revolution of the engine, a vacuum in the crank case, drawing the gas and oil mixture through the hollow crank shaft and a mechanically operated poppet valve into the crank case where it is compressed during the next half revolution, then entering the cylinders by means of the by-pass, filling same. A short time before the head of the piston clears the by-pass, the exhaust valve is opened mechanically and the burned gas rushes out, driven by its own pressure, mostly before the piston head reaches the by-pass opening and as the exhaust valve is still open at this moment, the new charge entering the piston gets a chance to assist in driving the remainder of the burnt gas out.

Touching on the constructional side of this new aeronautical power plant, the different parts of the engine are machined to fit within one-thousandth of an inch, and are made on the interchangeable plan through the use of precision instruments and fixtures. The crank case is made of aluminum, and is cast in one piece. Cylinders are made from cast iron machined all over. The pistons from the same grade of cast iron and contains three rings, of which two are above and one below the wristpin. The crank shaft is double throw, and bored out to reduce weight and to admit the gases. The exhaust valve is located in the head of the cylinder and is made from the same grade of cast iron as the latter and is of sufficient area to empty the cylinder in minimum time. The magneto is driven positively at crank shaft speed which insures an easy starting of the engine direct, without the aid of battery ignition. The engine is held together by means of two tension bars terminating at each end in a valve cage retainer in which the valve is seated and held to the cylinder and with the same is held to the crank case. It is natural that the cylinder valves, etc., exert an enormous pressure through the action of the centrifugal force, and keep the valves seated tight. Consequently in this way the cylinder is in compression instead of intention and as the tension bars are of sufficient size to take care of the pressure at a high speed with an ample factor of safety, there is no danger whatever for the parts to become loose or to be thrown off. American-made annular ball bearings have been used as main bearings. The connecting rod bearings are made from best white brass. The lubrication system employed is the spraying system by which the oil is drawn into the crank case in form of a fine spray, oiling in this way all internal working parts. The testing experiments of this engine have not been completed, at the time of going to press. However, arrangements have been made with one of the foremost universities to have this engine tested with the aid of all scientific means, and the results of these tests will be published in a subsequent issue.



Detroit Rotary Motor

Church Aeroplane Co. Busy.

The Church Aeroplane Co. has completed a Bleriot, cross-channel type, for Cohan & Harris, theatrical managers, to be used this fall in the new play, called the "Aviator."

A biplane is also building for Kramer, the former bicycle champion.

The *World* has bought an exact model of the Curtiss Albany-New York flyer, built to scale 2 in. to the foot, and all details are carried out very minutely. Seven of the principal type models have been shipped to Revere Beach. These were built to order for the Suffolk Amusement Co., and are on exhibition in connection with a daily balloon ascension.

The Church company recently moved to new quarters, 123 Smith St., Brooklyn, where there is room enough to build four machines at once.

Rinek Engines Two a Month.

The Rinek Aero Manufacturing Company have now secured the services of a first-class mechanical engineer, Mr. William Francis, and are now in a position to turn out two engines a month. Mr. Francis succeeds J. E. Smith, who is no longer in their employ.

New Books.

Modeles d'Aeroplanes is the title of a recent book on model building. It is well illustrated, with drawings of models, power plants, etc., and there are listed small propellers of various sizes, gasoline motors and rubber-band plants.

Price, 2 francs, from Librairie de l'*Aviation Illustrée*, 5, rue Coëtlogon, Paris (VIe), France.

Encyclopedie Aeronautique, by L. Ventou-Duclaux. (Published by F. Louis Vivien, 20 rue Saulnier, Paris. Price, 1 franc 75.) An 8vo brochure containing 300 aeronautical items and terms with definitions and comments. The various machines are concisely described and illustrated and the book is practically an extension of the author's popular "l'Aviation Expliquee."

Trade Opportunities in Mexico.

AERONAUTICS' representative in Mexico, Mr. Edward L. Ramsey, Box No. 133, Veracruz, V. C., Mexico, advises that he receives inquiries almost daily from parties in different parts of the Republic, for information as to where aeronautical supplies of all kinds can be obtained, and states that if the manufacturers and dealers will send him catalogues and descriptive matter of engines or samples, of supplies, etc., he will be pleased to forward same to parties making inquiry.

Independent aviators or exhibition companies would do well to address Sr. Don Guillermo de Landa y Escandon, Governor of the Federal District, at Mexico, D. F., Mexico, who is also the President of the National Centennial Committee, with the idea of securing engagements for the Aviation Meet which is being contemplated and which will be held in conjunction with the Centennial Celebration in the City of Mexico during the month of September.

Barberton Aviation Co.

The Barberton Aviation Co., Barberton, O., is offering a modified Curtiss type machine for general sale, equipped with an Elbridge engine, 40-60 h. p. The spread is 37 ft., by 6¼ ft. fore and aft the main planes. The weight complete is about 800 pounds. The equipment includes Bosch magneto and El Arco radiator.

Rubel Company Aero Catalogue.

A most pretentious catalogue having a full line of aero motors and supplies, aeroplanes, etc., is that just gotten out by R. O. Rubel, Jr. & Co., of Louisville, Ky. Nearly everything in the aeronautical line is listed.

Many Engines Sold.

Many sales have been made the past month by engine makers all over the country. The Hall-Scott motor, a new one on the Coast, has already done a promising business. And in this issue will be found some other new motors on the market. The Rinek Aero Manufacturing Co., in Easton, the Harriman and other companies report demands up to the limit of output. Among purchasers of Elbridge engines are John E. Clark of San Francisco, who is building two biplanes; Samuel Barton, 1008 Herkimer St., Brooklyn, N. Y., a 20 h. p., 2 cylinder, for a monoplane; John Sexler, Union Hill, N. J., a 40-60; Glenn Ethridge, Westbury, L. I., 40-60, for a Curtiss type biplane; H. C. Cook, 128 West 125th St., New York, who has a 40-60 for his Curtiss type; George Schmitt, Rutland, Vt., a 40-60, for a Curtiss type being built by Wittemann Brothers.

Nicaraguan to Buy Aeroplanes.

Dr. J. J. de Praslin of Nicaragua has been visiting various aeroplane exhibitions in this country and is now in St. Louis. He became interested there in the Curzon machines, and states that he may possibly buy 12 and remain long enough to become proficient in operation, so as to teach aviators in his own country.

The Curzon manufacturing plant and training school has removed from Chicago to Washington Park, East St. Louis, Ill., where perfectly level grounds are to be had, two miles long by one mile wide, with plenty of surrounding country free of obstructions. A course five miles in length can be flown over.

Chas. C. Bradley, of Pacific Aero Club, has had some interesting results with his large propeller. This laminated propeller is 8 ft. in diameter, with an 8 ft. 3 in. pitch; blade at widest part is 24 in. Turned at about 400 r. p. m. by a 20 horse power 4-cylinder, water cooled motor, 3¾ x 3¾ bore and stroke, the propellor going 1 to 2 of motor, a thrust of 230 pounds was recorded on scale. This propeller is of very neat workmanship and was made by Mr. Bradley personally.

Incorporations.

National Manufacturing & Aerial Exhibition Co.; capital $50,000. Incorporators, Eric R. Mackay, James L. Davis, both of Chicago; Ill.; G. W. Dorsey, Jr., Wilmington, Del.

Detroit Aeroplane Co., Detroit, Mich., $20,000. Curt Weinburg, Fred Weinburg, Ray Wilcox, William Anderson, Alfred Brawn.

The Latendorf Aerial Navigation Co., 34 East 28th St., Bayonne. The authorized capital is $50,000, divided into 1,000 shares of $50 each. The incorporators are Lowell B. M. Hoig, of Orange; G. Edward Menzel, of Maplewood, and Howard W. Forsyth, of Mount Vernon, N. Y.

Chicago Aeronautical Exhibition Co., 2,500; exhibiting airships, aeroplanes, balloons, etc. Charles E. Bartley, Robert T. Laughlin, James E. Gilles.

The Aeronautical Society, New York; promote aeronautics; capital, $10,000. Incorporators Thomas A. Hill, Lee DeForest, Hugo C. Gibson all of New York City.

Stella Aeroplane Co., New York City; manufacture and construct airships heavier than air; capital $50,000. Incorporators, Paul de Kilduchevsky, 316 East 16th St.; David Edelstein, 1605 Prospect Ave.; Isidor Wolfberg, 841 Fox St., all of New York City.

American Aeronautical Association, membership corporation, June 22, 1910. To form organization of representatives of lawfully organized aero bodies, organize other bodies, issue pilot licenses and generally supervise and regulate aeronautic endeavor, hold meets and contests, maintain club house, develop science of aeronautics, establish aviation schools, encourage helpful legislation, cooperate with manufacturers of aerial products on the continents of North and South America and adjacent islands. Directors named to serve until first annual meeting: Joseph T. Adams (New York), Martin Bloomer (Westfield, N. J.), William Borchers (Brooklyn), A. Franklin Callahan (Chicago), James K. Duffy (New York), Mayer C. Goldman (New York), Clifford B. Harmon (New York), Joseph D. Havens (Kansas City), George Michael Haas (New York), James A. Hughes (Baltimore), Jerome H. Joyce (Baltimore), James B. Mee (New York), George A. Morrison (Cranford, N. J.), George M. Myers (Kansas City), Frank J. Palmer (Fanwood, N. J.), James E. Plew (Chicago), Augustus Post (New York), Joseph Snyder (New York), William B. Strang (Kansas City), Albert F. Zahm (Washington).

Pelletier Aeroplane Co., $25,000, New York City. Manufacture of aeroplanes, motors, engines, etc. Incorporators are H. E. Pelletier, E. J. Pierce and N. R. Green, New York City.

Burgess Company & Curtis, Marblehead, Mass. For the manufacture and sale of aeroplanes; capital of $80,000. Incorporators: President, W. Starling Burgess, Marblehead; treasurer, Greely S. Curtis, Rye, N. Y.; clerk, John Noble.

The Gallaudet Engineering Co., Norwich, Conn.; $100,000. Incorporators: E. F. Gallaudet, Denison Gallaudet and Grosvenor Ely, all of Norwich.

The Walden Manufacturing Co., New York City. To manufacture and deal in aeronautic devices. $10,000. Incorporators: Henry W. Walden, 37 St. Mark's Place; Abraham Levin, 1020 Simpson St.; Jacob Glass, 67 Second Ave., all of New York City.

America Exhibition Co., Atlantic City. For the holding of meets and the exhibition and flying of all types of air craft; $10,000. Incorporators: Charles B. White, A. T. Bell, J. Haines Lippincott, Harry B. Cook, D. S. White and Jacob Weikel, all of Atlantic City.

Aero & Motor Club of Asbury Park, $25,000; incorporators, Geo. W. Pittinger, A. R. Parsons, J. G. Warner, J. M. Ralston, H. E. Denegar, H. G. Rockefeller, C. A. Atkins, Milan Ross, J. L. Kinmouth, W. A. Berry, J. M. Ralston, C. R. Zacharias, Margaret H. Frost.

The William T. Thomas biplane has been making many good short flights at Hornell, N. Y. A full description of this machine appeared in a recent issue of AERONAUTICS.

SUBSCRIBERS EXCHANGE AND FORUM

THE MOTT "ROTAPLANE."

To the Editor of AERONAUTICS:

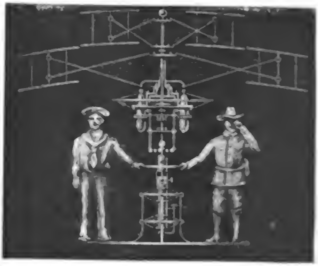
The accompanying illustration is an amplification of the air runner or Rotaplane set forth by the writer in the *Scientific American Supplement* of Oct. 25, 1902. In that article will be found, I think for the first time in print, the recently much-used word aviator, to designate the operator of a heavier-than-air flying machine. The general subject of orthogonal flight was illustrated and discussed by the writer in the above publications of Aug. 11, 1894; Jan. 30, 1904, and the *Electrical World* of June 20, 1896.

As a replica or close copy of the device herewith illustrated is now under construction, it is thought a brief statement of the characteristics we will doubtless establish may be of interest to readers of the fast developing aerial art, and they are certainly more numerous than when the articles referred to were published. This device is especially designed for warships and kindred purposes. For the army, for explorations or for preliminary surveys, etc., it may be dismantled for compact transport. The design for general commercial usage weighs less and appears somewhat different in aspect, as the aviators are seated and other expedients availed of for maneuvering, which will be described later. It may be flown from any place without a runway or other starting arrangements, and will alight at any unobstructed point where there is space for it to stand upon. It is intended for use as a ship's adjunct and flown from its deck. It may be flown from land; it may be flown from water. It will rest upon a sea of considerable roughness, when properly equipped therefor, and will rise therefrom with greater efficiency (less power) than from the land, because of lessened weight, due to partial submergence, and greater facility, because of the absence of drag due to vertical tilt as distinguished from forced translation through water and the consequent skin frictional resistance of any such attempts with monoplanes, biplanes or triplanes.

The modus operandi of the translation and direction of this machine is, curiously enough, the same physical principle that lends itself to the locomotion of land animals in walking or running—viz., the center of gravity displacement. That is to say, when in suspension the center of gravity of the machine is determined by the position of the load relative to the axis and the load is the operators, who are free to move together or separately about and around the axis or supporting pedestal of the machine. Obviously, then, the machine is careened and the cant or tilt of the axis to the points of the compass determines the direction of translation through the air, and it takes little cant to make high speed. It is easily shown that gyroscopic action will not interfere appreciably in the operation of handling this machine. The action of the gyroscope is only apparent when it is subjected to *quick* movements, or sudden precession, from its plane of revolution. The heavy wheels of a vehicle rounding a street corner, or the driving wheels of a locomotive rounding a curve, have a decided gyroscopic tendency: but we know it is negligible, due principally to comparative moderate rotative speed and the *gradual* changing of their planes of revolution.

Instead of so-called automatic stability, it is apparent that this machine has inherent stability like a boat; and this can be made adjustable by telescopic arrangement. Quite the same as a boat can be made variably stable by the weight and position of the load relative to the water line or plane of buoyancy. Hence the long training to acquire specialized skill is not necessary. The mental and ordinary requirements of a competent auto driver would be all-sufficient. Wind resistance is minimized by compactness, which, combined with weight, insures precision of movement when in the air. With proper equipment its shop cost would be moderate.

I have shown how the machine is directed by the center of gravity displacement. Other maneuvers, such as jockeying to attain altitude, are effected the same as we meet the up and down grades with our automobiles and other vehicles by increasing or decreasing the motive power. By utilizing the two expedients described, every mentionable evolution can be made in the air, from a stand-still or stationary suspension—even spinning around like a top in either direction in suspension—to a straight, curved or spiral path up or down at any angle to the horizon—or vertically—without the impedimenta of tail, wing, rudder, aileron or complicated mechanism, or the addition of a pound weight.



"The real future of flying, or rather the practical solution of the problem of the air," Mr. Chanute thinks, "will come with the explosion motor turned into a 'sustention' engine," following a statement that he does not foresee much utility for aviation carried on along the present lines. Doubtless the heart and key to all types of flying apparatus lie in the motive power, and all types of engine will needs be adapted to the different types of machines, of which at the present time there are only two in evidence of the heavier-than-air sort. Doubtless also the greatest field for broadening and perfecting the aerial art is for the theorists to get busy and evolve a reliable fundamental power principle, or construction, involving no reciprocating parts like the electric motor, for instance, which, unfortunately, is not a prime mover. Then we will begin to see daylight. I know of at least two of some promise. Barring this desideratum, we must do the best we can with existing systems.

The original arrangement of the two-cycle engine shown in the publication first referred to, of radially arranged revolving cylinders incorporated at the hub, has been introduced substantially on the same lines by the American Adams-Farwell and the French Gnome companies for aeronautical work. These rotatory engines have features of air-cooling and lightness which are very strong factors and are likely to be controlling for some types of flying machines. In the illustration herewith I have eight two-cycle cylinders grouped around and parallel to the axis. The eight cylinders act as a unit, of course, through the transmission. This makes a good arrangement in some respects, but, for certain mechanical reasons, the prime mover of the machine under construction is arranged as three twin-cylinders acting as a unit through a reverse motion differential speed transmission of nickel-steel spur and internal gears. The maximum power developed is 90 horse; the normal power is 75 horse for the three engines—i. e., six cylinders of 12½ horsepower each. The engine has special features for clearing the cylinder and purifying the mixture for perfect combustion. It weighs about 202 pounds, or 2.7 pounds to the horsepower. I have aimed in the present construction to make a full-sized machine, which can be considerably modified without reconstruction for experimental data of which there is practically none extant. With that end in view, the diameter over all may be varied from 12 to 17 ft. It is believed, however, that with high power and efficient screw action diameters of around 12 ft. will be sufficient for the practical working of Rotaplanes of medium-load capacity.

The illustration shows superimposed screw blades supported by a tubular double-rim tangent wire-spoke wheel. This (rotary) biplane arrangement has not been tested out by the writer, but the machine under construction will determine the advantage or otherwise of this feature. The gasoline and lubricant are contained in the 1/32-in. sheet-steel pedestal. The carburetor has been changed from near the base to near the engine, so it will not be interfered with when alighting on the water. The total weight of the machine for two persons is about 400 pounds.

The word aeroplane, or monoplane, or biplane, or triplane, applied to the respective examples of present-day flyers, is a misnomer, because the supporting surfaces of all machines up to the present time have been aerocurves exclusively—something quite different. In view, however, of the hold these words seem to have on the popular imagination, I will venture to name the type of the machine illustrated herewith a rotary aeroplane or Rotaplane.

S. D. MOTT.

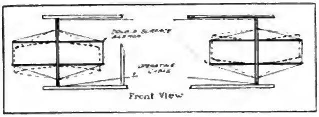
Passaic, N. J., July 30, 1910.

HAS 'PLANE—WANTS MOTOR.

W. J. Diefenbach has finished a 15 ft. Curtiss type biplane and needs a motor. He is willing to part with an interest in his machine and requests aid to this extent. Letters will reach him care of the Aeronautical Society, Mineola, N. Y.

J. C. PRESS HAS FLEXIBLE AILERON.

John C. Press, 100 Burritt Ave., South Norwalk, Conn., suggests a device for the maintaining of lateral equilibrium by means of flexible ailerons as shown in the sketch. These are fixed at an upward angle. To get increased lift on one side of the machine, the designer curves the aileron down on that side and curves it up on the other. He claims that no turning movement will be caused by this device.



A LETTER FROM SOUTH AFRICA.

Joe W. Naude, Graaff Reinet, Cape Colony, is industriously working out some novel features in flying machines, not to mention an aeroplane that uses a small motor for starting only and a helicopter combined with a biplane glider. The novelties cover lateral automatic stability, aero brake, means for changing angle of incidence main planes during flight, shock-absorbing device and mono-wheel and skid combination, reversible propeller, vertical and horizontal rudders both fore and aft, cooling device for air-cooled motors in tropical climates, universal control, emergency second control, warmer for gas and oil in cold climates and at high elevations, fluting of under planes to prevent skidding.

WRIGHT AND CURTISS EQUILIBRIUM CONTROL.

Dear Sirs:—

I would like to give my idea of the difference between the Wright and the Curtiss equilibrium control.

When the Wright machine tips to one side, the low side is warped so as to increase its angle of incidence. In other words, the lift of the low side is increased and that of the high side decreased. The low side, having the greater angle of incidence, has more drift; this would make the machine travel in a circle with the low side toward the center, this tendency is overcome by manipulating the rudders.

The ailerons in the Curtiss machine are analogous to elevator rudders. Then when this machine tips to one side, the low side is steered up and the high side is steered down by manipulating the ailerons or wing tips. In a Curtiss machine flying there is no very noticeable movement in these ailerons, which goes to show that they move through very small angles. Since these surfaces are flat their drift at small angles is very slight, so that any difference of resistance (if there is any) at the wing tips is so slight as to be immaterial, therefore the machine does not deviate from its course.

E. S. LOCKE,

1519 Oxford St., Berkeley, Cal.

HAS NEW STABILITY DEVICE.

To the Editor:—

There has been so much talk of late regarding the Wright patent and the danger of their monopolizing and hindering the advancement of the art that I take this opportunity of showing a few different improvements designed to be used on any make or style of aeroplane and render flying safer and soaring more possible.

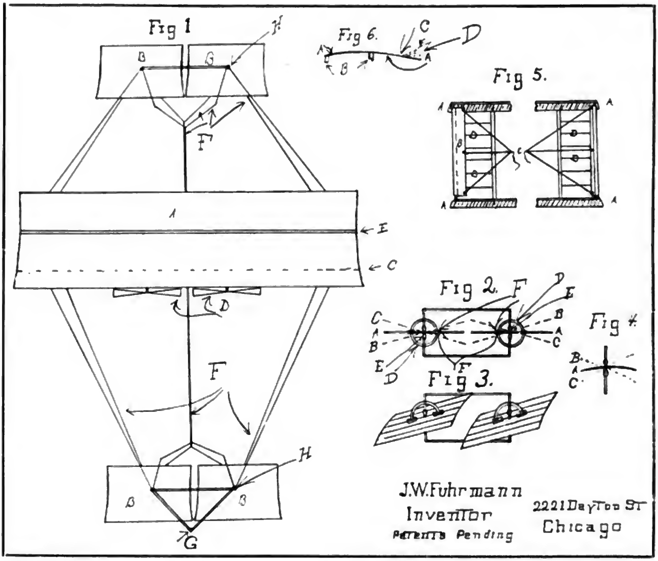
My objective point has always been an instantaneous control under all circumstances and conditions, all possible accidents considered and provided for. In my improved auxiliary plane system, I think I have accomplished all this and more.

Fig. I is a plan view of a machine with improved horizontal or elevating rudders, with which it is possible to steer up or down and to right or left and balance the machine simultaneously with one lever. The dotted line C, on main plane A, shows end of ribs and beginning of extremely flexible portion as shown in Fig. VI. A is rib; B is beam; C, rear end of rib; D, flexible portion of rib which in itself is an equalizer of pressure but may be warped down on the low side of machine either manually or automatically.

Fig. V shows two vertically disposed screens operating transversely of the machine, designed as an emergency or auxiliary lateral steering gear with which vertical cells or partitions must be used to prevent side drift as in Voisin type or may be used to stop machine when both are pulled out simultaneously. In construction they are simple and are practically the same as the ordinary roller curtain or window shade without rachets. The drawing represents a front view of both ends of machine: A, main planes; B, adjustable screens; C, cords; D, wire in front of which the screens operate, thereby allowing the action of the springs on screen, which would be prevented by the pressure otherwise; the idea being to present a desired amount of surface on the side corresponding to the direction (i. e. right or left) in which the machine is to be steered, retarding one side of machine and permitting the other side. The longitudinal action front and rear is simultaneous. There is no transverse action of rear rudders except for emergencies. The advantages to revolve around to any position desired, might also be used to restore equilibrium to a certain extent by presenting surface on the high side of machine.

Fig. II is a sectional view of improved horizontal or elevating rudder, dotted lines showing their *longitudinal* action by means of which the equilibrium is maintained or instantly restored by tilting all auxiliary planes opposite the inclination of main planes: i. e., if the right side of main planes are low, tilt the auxiliary planes opposite so that the right sides of all auxiliary planes front and rear are high (Fig. II). B E are adjustable bolts between which auxiliary planes operate; D is a guide passing through central support and preventing planes from getting out of their proper positions, is hinged on both sides of planes to allow transverse action: F, hinges.

Fig. IV is a side sectional view of rudder showing the transverse action common to all elevating rudders now in use.



J.W.Fuhrmann
Inventor
Patents Pending

2221 Dayton St
Chicago

Fig. III shows a rear view of front rudders when operator is steering up and to the left, shows result of combining the longitudinal action Fig. II, B, and the transverse action Fig. IV, B. of this steering system are many, some of which are that it automatically banks machine and prevents side drift, the principle is identical to a bird's; it is safer and more practical; is more convenient, gives greater pressure and lifting power both on auxiliary planes and on main planes;; makes soaring more safe and dependable; does not require any vertical surface or rear vertical rudder; it is a one lever control, gives instantaneous balance, is not liable to break or get out of order, is simple and cheap and is not an infringement on any body.

The extremely flexible portion on rear of all planes is designed to copy as close as is possible the feather, which has a rigid stem with very flexible edges which bend up under pressure as in Fig. VI D, dotted lines showing various possible results of pressure. A slight propelling force would be derived from position E.

Fig. I G vertical rudder post, if one is used. F is the various parts of framework which must necessarily be altered to suit different types of machines; D, propellers; E, main lateral beam; H, central support on which rudders operate.

I will appreciate all criticism and opinion of those interested. I will gladly answer any questions and supply all further information at my command.

J. W. FUHRMANN,
2221 Dayton St., Chicago, Ill.

The monoplane of P. F. Gillette is nearing completion. This machine is, in the main, a "Bleriot" type, but is considerably larger and has a number of modifications. The spread is 34 by 29 ft. fore and aft, wings are detachable with "Farman" type ailerons on ends. A triangular body supports at the rear "Antoinette" type rudders, and carries also horizontal and vertical fins; two masts in center will support planes, which are 6 ft. 6 in. in depth. The ribs are of built-up construction and have the usual monoplane high camber; they will be double covered by Naiad cloth. Wheels 26 x 2¼. Total surface, 208 sq. ft. Weight of machine without motor, 275 pounds; weight of entire machine without operator, 600 pounds. This allows 325 pounds for the complete power plant. A 50 horse power motor will be used. Body will be all covered.

Tod ("Slim") Shriver, for many years Captain Baldwin's right hand man, and selected by Curtiss when he was abroad last year, with H. J. Dietz, the lamp manufacturer, has organized the Hempstead Aeroplane Co., of Mill Road, Hempstead, L. I. Machines will be built for general sale as well as for exhibitions. The Kirkham 6-cylinder engine will be used.

The Hendee Mfg. Co., Springfield, Mass., makers of Indian motorcycles, are working on aeroplane engines of a very light weight, waterproof tight, of 4 and 8 cylinder, 25 and 50 h. p., respectively. The 8-cylinder type is of the "V" shape.

THE BIGGEST MONTH OF SPORT ABROAD

WONDERFUL ADVANCE IN FLYING—LE BLANC WINS 485-MILE RACE—45 NEW WORLD'S RECORDS IN MANY CONTESTS—SENSATIONAL FLIGHTS ACROSS PARIS—NEW HEIGHT RECORDS MADE AND BROKEN—CURTISS BEATEN.

Le Blanc Wins $20,000 Prize.

COVERS 485-MILE COURSE.

Aug. 17.—Alfred Le Blanc arrived at Issy, in the suburbs of Paris, at 6:45 o'clock this morning and is the winner of the cross-country flight which started from there on August 7.

For the *Matin's* $20,000 contest over the "Eastern Circuit," a distance of 782 kil. (485.91 miles), 35 machines entered. The prize was offered to the first aviator who, leaving Paris on the 7th of August returned by the 17th, after touching at the various points on the course. The various cities and individuals raised prize funds, in all totaling $52,500 and contests for height, starting, etc., were held at the various controls. Those who dropped out stayed to compete in the local events.

The race was divided into the following stages:
Paris to Troyes, 135 kil.
Troyes to Nancy, 160 kil.
Nancy to Charleville to Mezieres, 160 kil.
Mezieres to Charleville to Douai, 139 kil.
Douai to Amiens, 78 kil.
Amiens to Paris, 110 kil.

On August 7 eight actually started and six got to Troyes—Alfred Le Blanc (Bleriot) 1st, Emile Aubrun (Bleriot), Mamet (Bleriot), Lindpaintner (Sommer), Weymann (H. Farman), and Legagneux (Sommer). Le Blanc's time was 1:33:20.

Second stage, Aug. 8.—Le Blanc, Aubrun and Legagneux arrived. Le Blanc was fastest in 2:14:59.

Third stage, Aug. 11.—Le Blanc and Aubrun arrived. Le Blanc best in 2:04:00.

Fourth stage, Aug. 14.—Aubrun and Le Blanc reached Douai. Aubrun best in 2:40:00. Le Blanc took 3:00:00.

Fifth stage, Aug. 15.—Le Blanc, Aubrun and Legagneux flew from Douai to Amiens. Le Blanc best in 1:14:29.

Sixth stage, Aug. 17.—Le Blanc, Aubrun and Legagneux arrived. Le Blanc's time, 1:42. Total time of Le Blanc for 485 kil. cabled as 11:58:49.

French military officers flew part of the way with the contestants.

Le Blanc has been named for France in the Gordon Bennett balloon race, October 17.

NEW SHORT START RECORD.

Aug. 15.—Claude Graham-White made a new world's short start record of 29 ft. 9 in. with his Farman.

Aug. 14.—Either Louis Paulhan or Grahame-White will be awarded the *Daily Mail's* $5,000 prize for the greatest total of cross-country flying in France or Great Britain in the year ending August 14. Paulhan claims 780 miles and White 842.

Flights Day by Day

LATHAM WINS $2,000 FOR FLIGHT ACROSS PARIS.

Aug. 12.—Hubert Latham, coming from Bouy, flew over Paris at a high altitude and landed at Issy les Moulineaux.

By flying across Paris, Latham won the Falco Prize of $2,000. Latham's time was 2 hours 18 minutes 56 seconds.

NEW WORLD ALTITUDE RECORD

Aug. 11.—J. A. Drexel (Bleriot) made a new world's height record of 6,750 ft. at the Lanark, Scotland, meet. This was recorded on his barograph which will be tested for accuracy. Fog obscured the view of the ground and he landed 15 miles away. He was up over 2 hours. The meet closed August 13; $38,450 were divided in prizes among 7 competitors.

FLIES WITH 462 POUNDS EXTRA WEIGHT.

Aug. 11.—At the aviation meet at Johannisthal, Germany, Thelen, in a Wright machine, made a flight in which he carried 462 pounds extra weight.

PAULHAN FLIES 200 MILES.

Aug. 11.—Louis Paulhan to-day made two round trips by aeroplane between Brou and Chartres, with stops. He covered in all a distance of about 200 miles.

FLIES IRISH SEA.

Aug. 10.—Robert Loraine (H. Farman, new type) flew from Blackpool meet across Irish Sea to Llandudno in Wales. Fog prevented returning all the way and a landing was made on Anglesey Island. On August 1 he flew to Liverpool and back.

James Radley (Bleriot) who is coming to America to compete in the *Times* race and possibly the Gordon Bennett, made 58.32 miles per hour. Cattaneo flew 3 hours and 41 minutes. At a speed of 44.16 miles per hour. This was at the Lanark, Scotland, meet, August 6-13.

Aug. 10.—One of the propellers of a Wright machine broke at the Johannisthal meet and the aviator, Helm, was seriously injured.

LATHAM FLIES OVER PARIS.

Aug. 6.—Hubert Latham (Antoinette) flew from Chalons-sur-Marne to Paris, a distance of 87 miles, making two stops on the trip.

He passed over the city at an altitude of 1,850 ft., circling twice around the Eiffel Tower before landing.

The enthusiasm caused by Latham's flight had scarcely waned before the whirr of another propeller attracted attention. It was Weymann (H. Farman), who left Chalons shortly after Latham. Both landed at Issy les Moulineaux.

6000 FEET HIGH

Aug. 5.—Geo. Chavez at Blackpool meet, England, went up to 5,756 ft. in his Bleriot. On the same day, at Mourmelon, France, Weymann (H. Farman) tried to beat Brookin's record but came down after getting up to 4,100 ft.

FATALITY IN EXHIBITION BY WOMAN.

Aug. 1.—"Mme. Francke," while flying an H. Farman at Boldon, England, hit a flag pole with one of the wings of the aeroplane, turning the machine over. A boy was struck by the engine and killed. Mme. Franck suffered a fractured leg and some cuts.

WORLD RECORDS FOR 4-MAN FLIGHT.

Aug. 1.—Henry Farman carried three passengers at Mourmelon for 1 hour 4 minutes, the total weight carried including gas, oil and passengers was 627 pounds.

On the same day, at Douai, De Baeder carried three passengers on a Bregi biplane. Total weight carried was 708 pounds.

GERMAN AIRSHIP IN LONG TRIP.

July 27.—German airship "Gross III" makes trip of 170 miles in night ascent lasting 7 hours 50 minutes, Berlin over various cities to Gotha. Return was made on the 30th, trip lasting 6½ hours.

FLIGHT TO ALTITUDE 8,475 FEET.

July 27.—Reports from Italy state that two Swiss aviators flew up a mountain which is said to be 8,475 ft. above sea level, circling above the peak and returning safely.

July 9.—Maurice Tabuteau (Maurice Farman) flew 3 hours 35 minutes at Buc.

OVER PARIS IN AEROPLANES.

July 13.—Champel (Voisin) flew from Juvisy to Paris to Sartrouville, 50 kil., in 45 minutes.

July 14.—G. Busson (Bleriot) Juvisy-Paris-Bagatelle and return without stop.

The Aero Club of France has issued to date 150 aviation pilot certificates.

Germany is organizing a city-to-city race, Frankfort—Wiesbaden—Mayence—Mannheim, with prizes of 41,000 marks.

Postscript, Aug. 17.—John B. Moissant, of Chicago flying a Bleriot Monoplane and carrying a mechanic with him flew from Paris to Amiens and thence across to England in an attempt to fly to London. He landed near Dover.

BIG FOREIGN MEETINGS

Brussels.

N. KINET KILLED.

Next the last day of the Brussels meet, July 23-August 4, was marred by the fatal accident to Nicholas Kinet when, on August 3, he was caught in a squall in his H. Farman biplane and dashed to the ground. Kinet and Olieslagers were tied for the totalization prize with 16 hours 1 minute. The longest single flight was made by Jean Olieslagers on Aug. 3, 219.8 kil. Prize money totaled $27,600, cash and trophies.

BROKE FRENCH HEIGHT RECORD.

On July 30 Olieslagers broke the French height record, being credited with 1,460 m. (4,788 ft.). The barograph showed 5,084 ft. On August 1, Jules Tyck (H. Farman) went up to 4,834, officially, though he claimed 6,641 ft.

Caen Meeting.

With prizes totaling $9,700, Caen meeting, July 27 to August 2, Bleriot machines won $3,200 and Hanriot $2,600, balance divided between six others. Longest single flight was on July 30, by Paillette (Sommer) 3:13:58. On August 2, Morane (Bleriot) won height prize with 4,100 ft. Hanriot (Hanriot) won total distance prize with 9:57:56.

Bournemouth (Eng.) Meet.

July 16. Fifteen fliers at Bournemouth meet, July 11-16; $40,000 in prizes. Among other contests, L. F Morane (Bleriot) won the fastest lap prize at a speed of 56.64 miles per hour, while his time for 5 laps was 55.9 miles per hour. Hon. C. S. Rolls (Wright) won the slow speed test at 25.33 miles per hour. Morane also won altitude prize, going up to 4,107 ft. The longest single flight was 90 miles by Grahame White (Farman) at a speed of 35.2 miles per hour. In the weight carrying contest White was best with 425 pounds, including pilot. In alighting White was first, stopping within 7 ft. of the mark. The Bleriot machines had two sets of wings, one for lifting and one for speed. J. A. Drexel and W. E. McArdle, who have a flying school at Beaulieu, flew their Bleriots to the meet and back again at its conclusion. On the return Drexel carried a passenger home with him, the trip lasting 38 minutes.

At the Lanark, Scotland, meet, August 6-13, the prizes totaled $40,000.

Rheims' Meet.

MANY WORLD RECORDS ESTABLISHED AND BROKEN.

July 10.—Rheims meet closed after 7 days of flying. Of the 72 entered 46 competitors actually flew a total distance of 8,500 miles and $38,000 distributed in prizes.

The longest distance flown by one make of machine, 2,601 kil., by the Antoinette.

The best total distance by one man was 1,693 kil. in 19¾ hours, by Olieslagers (Bleriot).

Longest single flight 392.75 kil., 5hrs. 3 min. 5 1/5 sec., by Olieslagers (244.04 miles).

In Gordon Bennett elimination race to select French contestants, over 100 kil. course, Le Blanc (Bleriot) 1st in 1:19:13 3/5; 2nd, Latham (Antoinette) in 1:24:58 3/5; 3rd, Labouchere (Antoinette) 1:25:24.

The following new world's records were established:

Distance and Duration.—392.75 kil. (244.04 miles) in 5 hr. 3 min. 5 1/5 sec., by Olieslagers (Bleriot).

Speed Over Certain Distances.—5 kil., Morane (Bleriot), 3 min. 14 3/5 sec.; 10 kil., Morane, 5 min. 42 2/5 sec.; 20 kil., Morane, 12 min. 45 3/5 sec.; 30 kil., Olieslaegers (Bleriot), 23 min. 31 sec.; 40 kil., Olieslaegers, 30 min. 11 sec.; 50 kil., Leblanc (Bleriot), 37 min. 50 3/5 sec.; 60 kil., Leblanc, 45 min. 28 3/5 sec.; 70 kil., Leblanc, 53 min. 32 4/5 sec.; 80 kil., Leblanc, 1 hr. 2 min. 22 3/5 sec.; 90 kil., Leblanc, 1 hr. 11 min. 15 2/5 sec.; 100 kil., Leblanc, 1 hr. 16 min. 11 sec.; 150 kil., Olieslaegers, 2 hr. 3 min 49 1/5 sec.; 200 kil., Latham (Antoinette), 2 hr. 46 min., 2 sec.; 250 kil., Olieslaegers, 3 hr. 34 min. 53 4/5 sec.

Distance for Certain Period.—In ¼ hr., Leblanc (20 kil.); in ½ hr., Leblanc (40 kil.); in 1 hr., Leblanc (80 kil.); in 2 hrs., Olieslaegers (145 kil.) in 3 hrs., Latham (215 kil.)

Speed With One Passenger.—10 kil.: Ladougne (Goupy), 8 min. 14 2/5 sec.; Aubrun (Bleriot): 20 kil., 19 min. 39 1/5 sec.; 30 kil., 29 min. 10 sec.; 40 kil., 38 min. 51 sec.; 50 kil., 48 min. 28 sec.; 60 kil., 57 min. 58 2/5 sec.; 70 kil., 1 hr. 7 min. 31 1/5 sec.; 80 kil., 1 hr. 16 min. 59 2/5 sec.; 90 kil., 1 hr. 26 min. 33 sec.; 100 kil., 1 hr. 36 min. 6 sec.

Distance With One Passenger.—Aubrun, 137.125 kil.

Duration With One Passenger.—Aubrun, 2 hrs. 9 min. 7 4/5 sec.

Speed With Two Passengers.—Mamet (Bleriot): 10 kil., 10 min. 18 4/5 sec.; 20 kil., 21 min. 14 sec.; 30 kil., 31 min. 53 1/5 sec.; 40 kil., 42 min. 32 2/5 sec.; 50 kil., 52 min. 36 1/5 sec.; 60 kil., 1 hr. 3 min 20 3/5 sec.; 70 kil., 1 hr. 14 min. 36 3/5 sec.; 80 kil., 1 hr. 23 min. 33 sec.; 90 kil., 1 hr. 36 min. 4 sec.

Greatest Distance With Two Passengers.—Mamet, 92.75 kil.

Average Speed per Hour.—106.508 kil. (66.18 miles), Morane (Bleriot) with 100 horse-power, 14-cyl. Gnome engine.

The Leblanc Bleriot has 100 horse-power Gnome engine while the Antoinettes are of 50 horse power. The Olieslagers Bleriot was of 50 horse power and the Morane Bleriot, 100 horse-power Gnome.

Anthony Castellane, the "loop-the-gap" bicyclist, has arranged to fly a Farman-type machine for Fred Shuelder, and is now at Seabright, N. J., practicing. The Elbridge engine gave 190 lbs. thrust at 980 r. p. m.

Some propeller tests at Mineola recently showed up 360 lbs. on Harmon's 50 h. p. Gnome-engined Farman, and 300 lbs. with the Elbridge-40 on Joe Seymour's Curtiss. The propellers were Requa-Gibson.

NEXT MONTH

Notes on Propeller Design and Construction

By Spencer Heath

ASCENSIONS

NOTE—ASCENTS MARKED (*) ARE OVER 100 MILES IN LENGTH.

Lowell, Mass., July 14.—Chas. J. Glidden, pilot, Col. W. M. Bunting and Chas. A. West in the "Massachusetts" to Pelham, N. H. Distance, 8 miles; duration, 1 hour; altitude, 3,300 ft.

ALL NIGHT TRIP.

*Hamilton, O., July 18.—W. C. Collins and George Howard in the "Drifter" to Mt. Pleasant, 11 miles south of Anna, Ill., the following day. It was planned to break the U. S. duration record. Duration, 19½ hours; distance, 295 miles.

Pittsfield, July 19.—N. H. Arnold, pilot, F. S. Hoppin and George Von Utassy in the "Springfield," landing at Lenox. Duration 2 hours and 40 minutes; distance, 6 miles.

DR. ELDRIDGE MAKES RECORD PHILADELPHIA ASCENT.

*Point Breeze, Phila., July 20.—Dr. Thomas E. Eldridge, pilot, F. S. Underhill and A. B. Underhill in the "Philadelphia II" to 2 miles north of Pascoag, R. I. Distance, 231.125 miles; duration, 12 hours 5 minutes; altitude, 10,550 feet. Of Dr. Eldridge's 19 trips, he says, this was the best of all. The beauties of the scenery were indescribable. For 6½ hours during the night of the 20th only 1½ bags of ballast were used to keep the balloon at an average altitude of 1,100 to 1,400 ft. During the trip the states of Pennsylvania, New York, New Jersey, Connecticut, Massachussetts and Rhode Island were sailed over in this record ascent from Philadelphia.

St. Louis, July 24.—Andrew Drew, qualifying as pilot in the "Missouri" to Collinsville, Ill., going the 19 miles in 25 minutes.

Jackson, Mich., July 29.—N. H. Arnold, pilot, and L. E. Hayden.

Jackson, Mich., July 26.—N. H. Arnold, pilot, H. W. Alden and Burns Henry. Distance, 4 miles; duration, 3 hours; altitude, 4,000 feet.

Jackson, Mich., July 27.—N. H. Arnold, pilot, W. W. Clarke and Frederick Lewis in the "Mich. No. 1," the new balloon of the A. C. of Michigan.

*Pittsfield, July 27, 1910.—W. H. Van Sleet, pilot, and Alton Farrel, in the "Springfield," landing at Wickford, R. I. Distance, 107 miles; duration, 5 hours and 15 minutes

ANOTHER NIGHT ASCENT.

*Hamilton, O., July 28.—W. C. Collins, George Howard and Jean Arent in the "Drifter" to 4 miles west of Marion, O., on the 29th. Duration, 14 hours 25 minutes; altitude, 8,000 feet; distance, about 115 miles.

LONG TRIP FROM CANTON.

*Canton, O., July 30.—J. H. Wade, Jr., A. Leo Stevens and Jack Allen in the new Wade balloon "Buckeye" to 6 miles west of Denver, W. Va. Denver not on the atlas. Distance to county seat of Preston county is 132 miles.

Jackson, Mich., Aug. 1.—Mr. and Mrs. Wedworth Clarke up in the "Michigan."

Pittsfield, Aug. 3.—Wm. Van Sleet, pilot, W. M. Remington and S. H. Hancock in the "Springfield," to Grafton, N. Y. Distance, about 35 miles; duration, 2 hours 40 minutes.

ANOTHER NEW PHILADELPHIA RECORD.

*Point Breeze, Aug. 3.—Dr. Thomas E. Eldridge, pilot, and Welsh Strawbridge left at 9:28 P. M., in the "Philadelphia II" to 2¼ miles north of Danbury, N. H., landing at 8:30 A. M. the following morning. After being in the air two minutes over 11 hours, covering a distance of 303.8 miles.

NIGHT TRIP.

*Lowell, Mass., Aug. 10.—J. B. Benton and J. Walter Flagg in the "Boston" to North Haverhill, N. H. Distance, 107 miles; duration, 5 hours 45 minutes.

Pittsfield, May 20.—Wm. Van Sleet, pilot, Messrs. Hunter and Smith, passengers, in the "Massachusetts," to Cheshire, Mass. Distance, 11 miles; duration, 30 minutes.

Pittsfield, June 5.—Wm. Van Sleet, pilot, J. B. Benton and a Mr. Parker, in the "Massachusetts," to Bennington, Vt. Distance, 31 miles; duration, 6 hours, 53 minutes.

CLUB NEWS

The Pittsburg Aero Club has been formed at Pittsburg, Pa., with the following officers: W. L. Smith, president; George H. Flinn, first vice-president; S. A. Pickering, second vice-president; C. A. Painter, third vice-president; J. A. Giesenkamp, fourth vice-president; H. P. Haas, secretary, and F. H. Richards, treasurer.

The Junior Aero Club of the Omaha Y. M. C. A. is encouraging model building. Each member is now building a model for a contest to be held during the aviation meet at Omaha July 23-27. A prize of $25 for first and $15 for second, with Glenn Curtiss as judge, is offered. The boys are given practical instruction in the building of models and the general principles of aviation, together with a detailed description of the leading models used to-day for flying. Sergeant C. F. Adams of Fort Omaha is instructor.

The **Aeronautical Society** was addressed by M. E. de Jarny on the subject of "Aviation Motors" on July 28. On August 11, the following subject was discussed by Messrs. J. Bernard Walker, editor of the *Scientific American*, Walter L. Fairchild, Rex. C. Norwood and Wilbur R. Kimball: "Cautionary Methods in the Trying Out of New Machines."

The **Aero Club of Blackstone Hill,** Oakland, Cal., is another boys' club, though little has been heard in the East of it. It was formed about two years ago with W. R. Davis, Jr., of 474 Prospect St., as president, and W. Moller, as treasurer. It has devoted its efforts mostly to models and gliders.

The **Aero Club of New England** has sold its 56,000 cu. ft. balloon "Massachusetts," and will buy a rubber racing balloon of 80,000 cu. ft. capacity.

The **Aero and Motor Club,** of Asbury Park, has been formed to "promote aviation and motoring and to conduct exhibitions in these sports," with a capital stock of $25,000.

The **National Council of the Aero Club of America** has established its headquarters in the Engineers' Building, No. 29 West 39th St., New York City, and members will always find a welcome in room 918 at the above address where there is an office staff always in attendance during regular business hours.

It is proposed to keep on file all publications of interest to the members of the Council and Secretaries of the various organizations are requested to send such publications as will be of interest in this connection.

At a luncheon arranged by Clifford B. Harmon and Gage E. Tarbell, before the latter's falling-out with the Aero Club, at which affair a number of members of the Club and the Aeronautical Society were present, it was decided to ask both organizations to appoint a representative to meet and endeavor to arrive at an understanding with regard to the friction which the Club insists exists between it, as parent, and the Society, as offspring. It was suggested at the luncheon that the representatives be Mr. Harmon for the Club and Hudson Maxim for the Society. The Club, however, appointed W. W. Miller, an attorney, and the Society delegated Thomas A. Hill, also a lawyer and a "rank insurgent" in the Club. Mr. Harmon was thought by the Club not to be eligible to the honor, as he is also a member of the Society, though sort of a non-resident. No conference has been held, no official communications have passed, and the idea is thought to have succumbed to dry rot.

What has become of the Aero Club of Philadelphia? Letters addressed to them are returned by the post office. The same is true of the Aero Club of the Northwest, St. Paul.

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New Advertisers.

Each month marks the entrance into the aero field of well-known concerns who are taking up the new industry, or entirely new houses who see opportunities in various branches of aeronautics. Among these new advertisers this month may be noted:

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Michigan Airship Co.
H. M. H. Mills.
Hopkins & De Kildnchevsky.
International Aeroplane Supply Co.
C. A. Coffin.
A. F. Smith.
W. P. Youngs & Bro.
M. Magee & Son.
R. O. Rubel, Jr., & Co.
G. H. Curtiss.

Corrected Figures New York-Philadelphia Flight.

Unfortunately for the standing of one of the first great cross-country flights in the States, that of Charles K. Hamilton from Governor's Island to Philadelphia and return, it seems evident that the official timers employed by the New York *Times* have made an error on the return portion from South Amboy to Governor's Island. The distances which were given out by that paper were far from correct, as we mentioned at the time.

Using the flying time of the *Times*, Hamilton made *57.66 miles per hour from South Amboy to Governor's Island, doing the distance of 22.105 miles in 23 minutes. No doubt this time should have been 33 minutes, a speed of 40.19 m. p. h. In view of the speed made going to Philadelphia, without stop, when everything was working well, 43.29 m. p. h., it does not seem probable that the great increase was made on the second half of the return journey, when the engine was even missing fire.

It is not intended to detract one iota from the achievement, but merely to follow out our intention of having nothing in the magazine but that which is accurate, when accuracy is possible to be attained.

Following are the *exact* distances, computed by Mr. Williams Welch, chief draftsman, office of the chief signal officer, U. S. A., and the newspaper figures on the time. No accurate time was officially taken by any aero organization:

Governor's Island to Philadelphia, 74.314 miles, 103 minutes.

Philadelphia to South Amboy, 53.125 miles, 81 minutes.

South Amboy to Governor's Island, 22.105 miles, 23 minutes.

Average speed to Philadelphia, 43.29 m. p. h.
Average speed to South Amboy, 39.35 m. p. h.
Average speed to Governor's Island, *57.66 m. p. h.
Total distance flown, 149.544 miles.

CLASSIFIED ADVERTISING

AVIATION ENGINE FOR SALE QUICK.—30 h. p., four-cylinder, equipped with Bosch Magneto and Laminated True Screw Propeller; 200 lbs. thrust; engine weighs 197 lbs. Whole outfit just new from factory. Will sell for half price or will exchange for 50 h. p. motor, A1 condition. Reason for change, want more power.

STEBBINS & GEYNET.
Norwich, Conn.

FOR SALE—Curtiss 7 h. p. motor, complete, with propeller and all attachments. Price $200. C. J. W. Roshon, 19 N. Third St., Harrisburg, Pa.

FOR SALE—Motor, 50 h. p., 2 cyl. "V," complete, ready for running. Brand new. $1,000. X. G. H., care AERONAUTICS.

AUTOMOBILE—Cameron 1910 runabout, 4 cyl., 24 h. p., air-cooled, Splitdorf magneto, Prest-O-Lite tank, pressure oil reserve, Warner Speedometer. Tires new; run 1,800 miles. Perfect condition. Demonstration. Speed 45 m. p. h. Motor can be bored for auxiliary exhaust and used in aeroplane. Duplicate has flown an aeroplane. Price $500. X. AERONAUTICS.

EXCHANGE—What have you to exchange for a fine two-passenger gas balloon, good as new, fully equipped? Address E. Brown, Peoria, Ill.

POSITION WANTED with a firm building, or parties about to organize a company to build aeroplanes. Advertiser, the designer of a practical monoplane, is a man of wide experience in the designing and building of automatic machinery, etc., and the handling of mechanics. Inventive, resourceful. Five years' study of aviation. C. Hustler, care AERONAUTICS.

FOR SALE—At a sacrifice, Bleriot Monoplane, cross-channel type, made by Bleriot, recently imported from France, Anzani motor. E. M. W., care of AERONAUTICS.

TYPEWRITERS.—All makes. Caligraphs $6.00; Hammond, Densmore $10.00; Remington $12.00; Oliver $24.00; Underwood $30.00. 15 days' free trial and year's guarantee. Harlem Typewriter Exchange, Dept., F. 18, 217 West 125th St., New York City.

AEROPLANE—Position wanted by woodworker and mechanic experienced in aeroplane and gas engine work. DAVIS, care of AERONAUTICS.

NO INFRINGEMENT—I am patenting design of aeroplanes, with no vertical rudder, which does not conflict with Wright patent. Need moderate capital to build. EXPERIENCED, care of AERONAUTICS.

BALLOON FOR SALE—New, 35,000-ft. balloon in fine shape. Full equipment and instruments. Cost $750. What will you pay or trade? EUGENE BROWN, Peoria, Ill.

FOR SALE—One 110,000 cubic foot balloon, holder of world's speed record. Also one 40,000 cubic foot balloon complete. Make offer. C. A. Coey, 1710 Indiana avenue, Chicago.

FARMAN AEROPLANE—For sale cheap. The identical Farman aeroplane which won endurance prize at Rheims, France, for flight of over three hours. New power plant. J. W. CURZON, Hawthorne Aerodrome, Hawthorne, Ill.

AEROPLANE ENGINES

ADAPTABLE ALSO FOR USE IN THE DRIVING OF

Dirigible Balloons and High Speed Motor Boats

EXPERIMENT with no EXPERIMENTS

EQUIP YOUR AEROPLANE with
an ENGINE of PROVEN MERIT

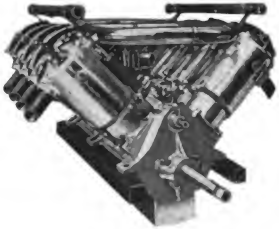
and thereby avoid the unnecessary expenses, accidents and barriers to success that naturally follow in the wake in the purchasing of an **untried** product.

IT IS THE ENGINE THAT COUNTS MOST

¶ More and more we realize this as brilliant success, and brilliant failure too, are recorded. It is to the engine we must pin our faith to bridge that distance between us and a complete mastery of the air. To all who are putting forward a strenuous effort to achieve this end, a RINEK motor will prove of invaluable assistance. They are the lightest, practicable, water-cooled aviation engines yet produced, and run with faultless precision.

TYPE B-8

60 H.P., Eight Cylinders, mounted "V" shape with a 90° relation to each other. Weight, 278 lbs. complete.



TYPE B-4

30 H.P., Four Cylinders, mounted vertically on a common crank case. Weight, 130 lbs. complete.

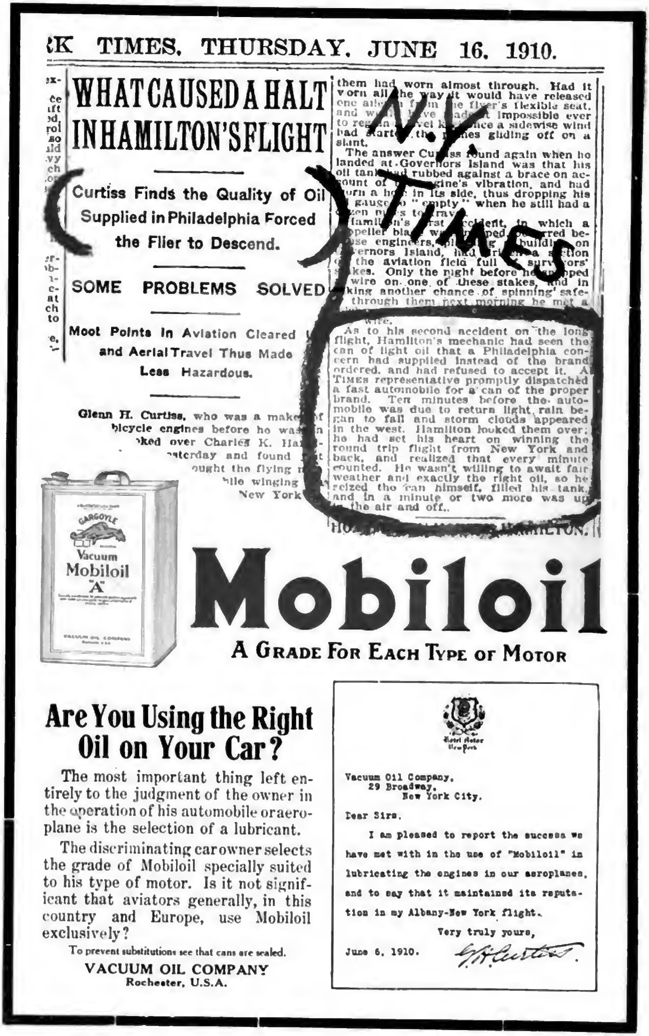
Favored exclusively by the experimenter in the science of flight, as they insure to him the maximum of safety

American Builders of the STANDARD VOISIN TYPE AEROPLANE

"THE ARISTOCRAT OF FLYING MACHINES"

THE RINEK AERO MANUFACTURING CO.

EASTON, PENNA.



ɛK TIMES, THURSDAY, JUNE 16, 1910.

WHAT CAUSED A HALT IN HAMILTON'S FLIGHT

Curtiss Finds the Quality of Oil Supplied in Philadelphia Forced the Flier to Descend.

SOME PROBLEMS SOLVED

Moot Points in Aviation Cleared and Aerial Travel Thus Made Less Hazardous.

Glenn H. Curtiss, who was a maker of bicycle engines before he was in [illegible] ʾked over Charles K. Ha[illegible] [illegible]ʾsterday and found [illegible] ought the flying [illegible] ʾhile winging [illegible] New York

them had worn almost through. Had it worn all the way it would have released one aile[illegible] from the flyer's flexible seat, and would have made it impossible ever to regain level keel once a sidewise wind had started the planes gliding off on a slant.

The answer Curtiss found again when he landed at Governors Island was that his oil tank had rubbed against a brace on account of the engine's vibration, and had worn a hole in its side, thus dropping his gauge to "empty" when he still had a dozen miles to travel.

Hamilton's first accident, in which a propeller blade was [illegible], occurred because engineers, [illegible] building on Governors Island, had [illegible] a section of the aviation field full of surveyors' stakes. Only the night before he [illegible] wire on one of these stakes, and in taking another chance of spinning safe[illegible] through them next morning he met a [illegible] wire.

As to his second accident on the long flight, Hamilton's mechanic had seen the can of light oil that a Philadelphia concern had supplied instead of the brand ordered, and had refused to accept it. A TIMES representative promptly dispatched a fast automobile for a can of the proper brand. Ten minutes before the automobile was due to return light rain began to fall and storm clouds appeared in the west. Hamilton looked them over; he had set his heart on winning the round trip flight from New York and back, and realized that every minute counted. He wasn't willing to await fair weather and exactly the right oil, so he seized the can himself, filled his tank, and in a minute or two more was up in the air and off.

HO[illegible]HAMILTON.

N.Y. TIMES

Gargoyle Vacuum Mobiloil "A"

Mobiloil

A GRADE FOR EACH TYPE OF MOTOR

Are You Using the Right Oil on Your Car?

The most important thing left entirely to the judgment of the owner in the operation of his automobile or aeroplane is the selection of a lubricant.

The discriminating car owner selects the grade of Mobiloil specially suited to his type of motor. Is it not significant that aviators generally, in this country and Europe, use Mobiloil exclusively?

To prevent substitutions see that cans are sealed.

VACUUM OIL COMPANY
Rochester, U.S.A.

Hotel Astor
New York

Vacuum Oil Company,
29 Broadway,
New York City.

Dear Sirs,

I am pleased to report the success we have met with in the use of "Mobiloil" in lubricating the engines in our aeroplanes, and to say that it maintained its reputation in my Albany-New York flight.

Very truly yours,

June 6, 1910. G. H. Curtiss.

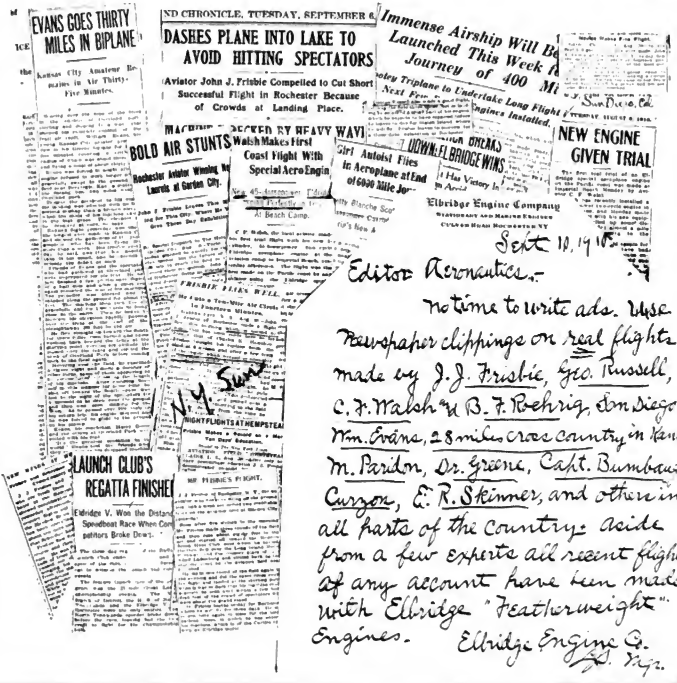
Printed in Bank Street, Number Fifty-nine, on the Presses of Eaton & Gettinger

Vol. VII OCTOBER, 1910 No. 4

AERONAUTICS

THE AMERICAN MAGAZINE OF AERIAL LOCOMOTION

PRICE 25 CENTS 39th ISSUE



EVANS GOES THIRTY MILES IN BIPLANE

Kansas City Amateur Remains in Air Thirty-Five Minutes.

ND CHRONICLE, TUESDAY, SEPTEMBER 6

DASHES PLANE INTO LAKE TO AVOID HITTING SPECTATORS

Aviator John J. Frisbie Compelled to Cut Short Successful Flight in Rochester Because of Crowds at Landing Place.

Immense Airship Will Be Launched This Week fo Journey of 400 Mi

oley Triplane to Undertake Long Flight Next Few ... Engines Installed.

BOLD AIR STUNTS

Rochester Aviator Winning Ne Laurels at Garden City.

Walsh Makes First Coast Flight With Special Aero Engin

At Beach Camp.

Girl Autoist Flies in Aeroplane at End of 6000 Mile Jo

DOWN; ELBRIDGE WINS

San Diego, Cal

NEW ENGINE GIVEN TRIAL

Elbridge Engine Company
STATIONARY AND MARINE ENGINES
CULVER ROAD ROCHESTER NY

N. Y. Sun

NIGHT FLIGHTS AT HEMPSTEA

LAUNCH CLUB'S REGATTA FINISHE

Eldridge V. Won the Distanc Speedboat Race When Com petitors Broke Down.

Sept 10, 1910

Editor Aeronautics.-

no time to write ads. Use newspaper clippings on real flights made by J. J. Frisbie, Geo. Russell, C. F. Walsh & B. F. Roehrig, San Diego; Wm. Evans, 28 miles cross country in Kans, M. Paridon, Dr. Greene, Capt. Bumbaugh, Curzon, E. R. Skinner, and others in all parts of the country: aside from a few experts all recent flights of any account have been made with Elbridge "Featherweight" Engines.

Elbridge Engine Co.
Mgr.

PROVEN It is easy to fly with the right power, because novices have flown successfully with

Harriman Engines . . . in . . . first attempts

30 H. P. Harriman Engine in Action at Mineola

If you are out to fly, equip your aeroplane with an HF Flying Power Plant and success is assured

30 H. P. Complete Power Plant Price, **$1250.00**	50 H. P. Complete Power Plant Price, **$1675.00**

1911 Models Now Ready For Delivery

NOTE:— Mr. Geo. Russell in his endeavors to fly at the Richmond County Fair, Staten Island, **did not use a Harriman engine**

Harriman Motor Works, So. Glastonbury, Conn.

AN AMERICAN BALLOON TRIP OVER ROME

Some Noted Events and Thrilling Experiences in Balloon Voyages in All Parts of the World, Written Especially for "Aeronautics."*

By Rufus G. Wells

IN 1870, after winning a balloon race in London with an English aeronaut, I went to Paris to offer my services to the new Republic. There I was employed by the Defense Nationale to construct a balloon for taking General Bazaine with his officers out of Metz and carrying them over the German army and landing them in France. From silk furnished by the government, I made a balloon two hundred feet in length. About the time that this was completed, the largest balloon at the time ever constructed, we were disappointed by the surrender of Metz by General Bazaine.

A most interesting experience in my ballooning took place during the World's Fair at Paris in 1889. I made an ascension in company with William J. Hammer, electrical engineer and director of Thomas A. Edison's exhibit at the Exposition, and Dr. A. Lawrence Rotch, director of the Blue Hill Observatory at Boston. Many interesting experiments, both electrical and astronomical, were made on the voyage. The balloon was in the air about four hours, travelling on an average twenty miles an hour.

On one occasion I made an ascension from a beautiful garden in Copenhagen. I was carried by the wind over to Sweden and landed in the sea, where I was rescued by men in boats.

On a visit to Italy I made an ascent at Milan during a festival. The balloon rose to the height of three miles, and I then made a descent in a parachute, to the great astonishment of the multitude, being the first exhibition of the kind they had ever witnessed.

From Italy I went to Constantinople, where I made an ascent over city, obtaining a magnificent view of the palaces, temples and mosques. On my descent I was well paid by the Sultan, who also gave me some rich and splendid gifts.

On an extensive tour in India I made many ascensions in the most celebrated cities Bombay, Delhi, Agra, Lucknow and Calcutta. The Maharajah of Cochin gave me a bag of money and took a diamond ring from his finger and made me a present of it. At Akyob, in Burmah, I made an ascension and was carried out over the sea. On being rescued by men in a boat and taken to land the people gathered around me, believing that one of their gods had appeared amongst them.

During a summer spent in the island of Java I made the first balloon ascension in Batavia that had ever been witnessed there. The balloon passed up through a cloud and the people thought it was the last they would ever see of me. I went off about 100 miles and landed on a rich tea and coffee estate, to the great astonishment of the natives at work there.

In South America I made ascensions at Lima, Peru; at Rio Janeiro and at Buenos Aires. At the latter place I descended in the La Plata River. On throwing out ballast the balloon rose so rapidly that the sun which had just gone down was seen rising about the horizon, in the west instead of the east.

On different visits to Mexico I made sixty ascensions, and received full remuneration and utmost courtesy from the people wherever I went. I was the first aeronaut to make a parachute descent in that country.

Rufus G. Wells

WANTED TO CROSS THE ATLANTIC.

It was my desire to cross the Atlantic with an immense airship seven thousand feet in length and two hundred feet in diameter, inflated with hot air, and enough fuel to burn and provisions to last on the way, not only to cross the ocean, but to go around the world with some brave companions. I ought to have carried out my project long ago, and to have been the first one to reach the North and South Poles with a gigantic dirigible. If wealthy men would assist, immense airships could be made to carry a hundred persons with safety to any part of the world.

All governments should use great airships in war and to visit all parts of the earth. I was very much pleased to carry the Stars and Stripes higher over Rome and other cities than any other person has ever waved them.

THE AMERICAN FLAG OVER ROME.

The Pope and Governor of Rome said I must not wave our flag over Rome—but I did wave it in spite of them, and they said I could not make another ascent from Rome.

(*Continued on page 135*)

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*Rufus G. Wells, up to his death the oldest living American aeronaut, died on August 3d at his home in St. Louis, aged 80 years, while sitting in his chair, stricken with apoplexy. An account of Mr. Wells' experiences in ballooning was written by him for AERONAUTICS in the fall of 1908. His most interesting story will be found in this issue.

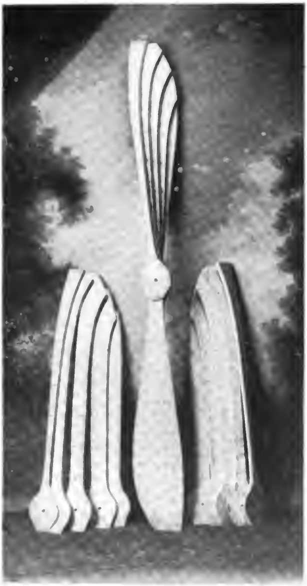
PROPELLER DESIGN AND CONSTRUCTION

By Spencer Heath,

OF THE AMERICAN PROPELLER CO.

SOME remarkable results are being attained by the American Propeller Co. from their "Paragon" propellers, according to the report of the Emerson Engine Co., of Alexandria, Va., which is putting a new 6-cylinder 2-cycle aeronautical engine on the market.

A "Paragon" propeller tested by them on one of their engines which they sold recently to Dr. W. W. Christmas of Washington, D. C., for his new biplane, Red Bird, now being experimented with at College Park, Md., gave the extraordinary thrust of 156 pounds at a speed of 1,100 r.p.m. The propeller was designed specially for the particular surface-weight ratio and other properties of the Christmas machine and the speed and power of the engine, the aim of the designers being to adapt the actual flying thrust of the propeller to the head resistance of the machine at its calculated speed of travel and that the propeller shall have the least disturbing effect upon the air when the engine is running at its most efficient speed of about 1,100 r.p.m.



The propeller in question is 8 ft. in diameter, by a pitch varying from 4½ ft. to 5 ft. at different parts of the blade. The material is all edge-grained white spruce with five laminations in each blade, all of the pieces being spliced or scarfed together at the hub in the manner characteristic of the "Paragon" propellers and all the glued joints throughout the blades being made doubly secure by numerous birch dowels regularly spaced. The hubs are faced with hard maple. The weight is 10¾ pounds.

It might readily be assumed from the great standing thrust yielded by the "Paragon" propellers that they are designed particularly with this result in view, but that is not the case, the standing thrust being merely incidental to a good design for giving thrust at speed.

The main feature of the American Propeller Co.'s work is to furnish propellers designed intelligently and scientifically for each individual case, believing that no standard design can be evolved while there is such wide diversity in flying machine construction. This diversity is shown in the extreme variations in surface-weight ratio, from about two to perhaps six and one-half or seven pounds per square foot of surface, to say nothing of the radical structural dissimilarities in different successful machines.

Each propeller is designed with three conditions in view: The most efficient running speed of the engine, the speed through the air at which, with proper propeller design the available power ought to carry the particular machine; and the estimated head resistance at this speed. From this preliminary data is derived the winding or helical path to be traversed by every portion of the blade, and every 6-in. section of the blade is designed with reference to the work it must do while traversing this path as an aeroplane (more properly "aerofoil") following a helical instead of a plane horizon. Each different blade section is given a suitable form and angle of incidence to its horizon, according to its particular speed, its necessary width and its relation to the other parts of the blade, and the entire number of sections so determined are combined into a single blade having harmonious properties throughout. This method of design naturally results in a blade of variable pitch at different distances from the center. In the progress of every design this variable pitch and all the other important properties of the blade, such as the gliding angles, coefficients of camber, etc., for its different parts, are plotted in diagrams on special cross-section paper.

In determining the blade area the principal consideration is that it shall be sufficient to keep the percentage of "slip" within the limits of good practice at all points, and the width is apportioned in a manner to give a fair distribution of work over the principal portions of the blade. The varying gliding angles are arranged to take advantage of the inflow of air from the periphery and give it a sternward flow with the smallest amount of disturbance. The co-efficients of camber (percentage of curvature) for the principal portion of the blade are derived from a consideration of the width, gliding angle and velocity of each point—the elements of width and angle increasing the coefficient and the velocity reducing it.

The diagrams of these varying features are of great interest, showing as they do, at a glance, all the different properties of the blade under its working conditions and making possible the very ready comparison of different designs.

Nearly all of the "Paragon" propellers have been designed in accordance with the principles already indicated with a view to their operation in actual flight, rather than their capacity to produce phenomenal thrust, although they seem to possess this capacity in greater degree than others. A few designs, however, have been gotten up for helicopter work, in which, of course, the standing thrust alone is the object sought. These designs proceed from a very different method of calculation and are not adapted to keep up their thrust at any considerable axial speed. We are not able at this time to give full particulars concerning tests of these helicopter designs but we

(Continued on page 118)

THE MAKE-UP OF A BIRD'S WING

By Dr. A. S. Rowe.

HAVING made a study of bird flight for years, I have been much interested in the article published in your esteemed AERONAUTICS, written by Prof. H. La V. Twining, of Los Angeles, entitled: "Can Man Fly With Wings."

These articles show a great deal of deep thought and close investigation into the science of bird flight, but have brought Prof. Twining to conclusions the reverse from those proved out by my investigations and experiments, i. e., that the air does pass through the feathers of a bird's wings on the up or forward stroke, and if you will kindly allow me space in the columns of AERONAUTICS, I will endeavor to give the experiments which led me to this conclusion; not for argument's sake but for the benefit it may be towards solving the problems of the science of aerial flight.

In the August number of AERONAUTICS, Prof. Twining, discussing the action of the up and down stroke of a bird's wings, says: "Much speculation has been indulged in as to the feathers opening on the upstroke to let the air through. Just a little intelligent observation of an extended wing will show how utterly fallacious this assumption is: The feathers overlap so they shingle on top from the part near the body to the tip. On the underside they shingle the other way. In either case, as the air strikes the surface, the feathers bind together and present a solid surface to the air. The direction in which they shingle cannot make any difference in this respect. If we take up the wing and blow violently on top of it, holding the hand on the other side, no air will be felt coming through. If we blow against the under side the same result is obtained."

Now, in order to arrive at an intelligent conclusion regarding the stroke of a bird's wing, and the action of air upon it during the strokes, we must understand the following points.

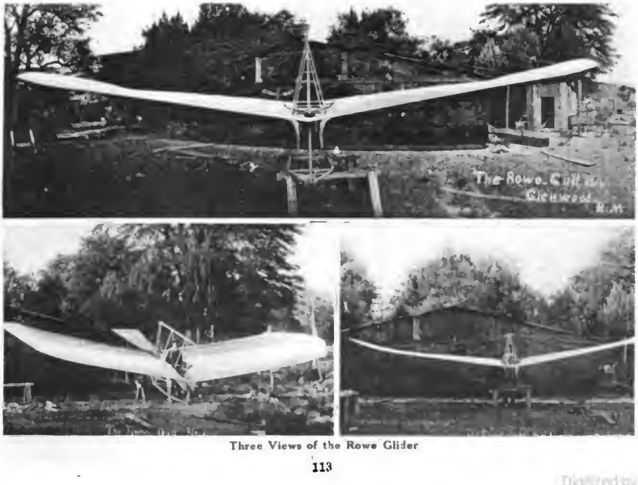
First.—The mechanical construction of the feathers. Taking the feathers of a turkey buzzard or pigeon's wing we find the barbs of nearly equal length on either side of the shaft near the body of the bird, and the barbs are of nearly the same flexidility on both sides of the shaft, those on the farther side being slightly the stiffer; but from near the body the barbs become longer on the inside of the shaft and shorter and stiffer on the opposite side of it with each successive feather, until in the feathers near the tip of the wing the shaft is nearly to the outer edge—thus forming a long valve, so to speak, with the shaft as an axis at one side.

Second.—The position of the feathers in the wing. They are placed in the first third of the wing nearest the body of the bird, or out to the second joint, parallel with the body and at right angles to the front edge of the wing at their insertion, and their flat surfaces are nearly horizontal with the front edge of the wing; also when the wing is extended. From the second joint they diverge outward from a parallel line with the body until, in the buzzard's wing, when extended they attain a position nearly at right angle to the bird's body.

Third.—The relative position of one feather to another. The feathers lap or shingle nearly one-half their width out the first third of the length of the wing. The barbs on that side of the shaft of the feather nearest the body under the preceding one nearly their length. On the other two-thirds of the length of the wing they lap under relatively less as the feathers diverge from each other.

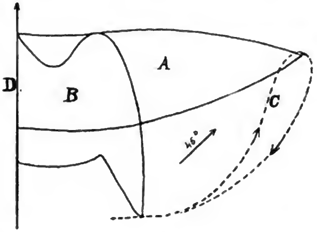
Fourth.—The relative proportions of the wing. Only about one-third of the length of a buzzard's or pigeon's wing is contained between the first two joints; the other two-thirds being made up from this point out. The feathers are much longer and wider in this section of the wing and the width of wing is about one-third its length.

Fifth.—The direction of the stroke of a bird's wing in relation to its body. The stroke varies according to the results to be obtained; as when in starting on flight the wing is raised much higher above the body and is brought farther below it, and the flexion of the wing is much less



Three Views of the Rowe Glider

than when the bird is in free flight, but on the up or forward stroke it always moves upward and forward, and on the down stroke moves downwards and backwards; thus making a rotary movement on the whole. The tip of the wing traverses a cycle corresponding to a curved line drawn from the tip of the bird's tail to the tip of the wing when extended. (See sketch.) The wing is not thrust forwards and backwards extended, as though hinged at the bird's body, but is flexed at every joint including the one at the body, to a greater or less degree. From the second joint out is the area of greatest motion. The more rapid the flight the greater the flexion that takes place in the wing at each stroke. In every swift flight a pigeon closes its wing nearly against the body at each stroke. The action of the wing then is outward, upward and forward from the body to the point of extension in the up or forward stroke, and the reverse in the downstroke, or downward, backward and inward towards the body. In the up stroke the front edge of the wing travels upward slightly farther than the rear edge, and the reverse on the down stroke. In normal straight-a-way flight the wing is elevated about as far above the horizontal line of flight in the forward stroke as it is brought below it in the down stroke.



Sixth.—The stroke of the wing relative to the line of flight. We see then that the forward stroke of the wing is made at an angle outwards from the line of flight something like forty-five degrees. The elevation and depression of the wing above and below the horizontal line of flight varies according to the lifting power required, increasing with the greater light.

Seventh.—The rapidity of the stroke of the wing in relation to the passing air. The bird's wing moving through the air on both the up and down stroke is always swifter than the motion of the air through which it is passing. Were this not the fact, a bird would be unable to rise from the ground and could not make headway against the wind.

Now, from the foregoing, understanding the mechanical construction of the feathers, their position in the wing, their relative position to each other, the relative proportions of the wing, the direction of the stroke in relation to the body of the bird, the stroke of the wing relative to the line of flight, and the rapidity of the stroke in relation to the passing air, we are enabled to make a test of the point in question, and will tke up the experiment where Prof. Twining left off, by taking the bird's wing and directing a blast of air downward against it in direct opposition to the up or forward stroke, as described above, at the same time moving the wing toward the air current, the same as does the bird in flight. The air will be found to pass through freely between the feathers, and the air will pass in greatest volume through the outer two-thirds of the wing. On the down stroke, the feathers lapping under each other as they do, are pressed against each other, which prevents the air from passing through upward; but on the up or forward stroke this pressure is temporarily released owing to the rapidity of the upward movement—this movement being much quicker than the current of air passing creates a slight pressure from above causing the long flexible underlapping barbs of the feathers to spring slightly downward admitting of the free passage of air between them. Birds, such as the quail, grouse, wild turkey and humming bird, which have a heavy body relative to the amount of sailing surface of their wings and who make their flight with a greater up and down stroke of the wings than do those having more sailing surface, will be found to have the feathers spread much farther apart in the outer two-thirds of the wings, the shafts of the feathers in this section being quite to the out edge, with the barbs underlapping much less, all of which is conducive to the free passage of air through the wing on the up stroke. And, too, another factor conducive to a free upward stroke of the wing, is the fact that the thrust is made in such a manner as to present the edges of the feathers, to a greater or less degree, toward the line of motion of the wing. This is accomplished to a great extent by the forward edge of the wing rising farther than the rear edge. There are several reasons that prevent us from being able to see the light between the feathers of a bird's wings when they make the up stroke in flight when passing above us. Three of the main reasons are: That the stroke is made most too quick for the human eye to catch it; the depression of the inner edge of the barbs of the feathers cause the feathers to assume more of a curve, the lower edge of one feather cutting off the line of light coming through the next; a portion of the bird's body and tail would obstruct the line of vision through the wing, owing to the angle of the wing in relation to the bird's body, and that of the position of the feathers in the wing.

Perhaps the failure of success of all the ornithopters built up to the present time is due to the fact that they only partially emulate the different movements of a bird's wing when it is in flight, as by the foregoing we can see that it would be a very difficult matter to make a machine that would be capable of obtaining the necessary movements essential to extensive flight; in fact, the complexity of such a machine would bar its usefulness. In Fig. 1, A is to represent an extended wing of a bird when in flight, B the flexed wing after the stroke, C the line traversed by the tip of the wing, if we were to look at it in the direction of the body during the stroke, should the bird's body not advance but remain stationary. When the bird's body is advancing in flight the tip of the wing describes a series of loops. D represents the line of flight, and the arrow the approximate angle of the stroke of the wing in relation to the line of flight.

In the glider built by Dr. Rowe it has been attempted to follow the shape of the bird, with the turkey buzzard as the pattern. The machine is 30 ft. 6 ins. spread, planes 8 ft. fore and aft, and the total length 15 ft. The weight is but 44 pounds. The depth of the curve of the planes is 7 ins. at the central section of the machine, this depth being at a point one-third back from front edge. This curve diminishes in depth until out 10 ft. toward their tips the planes are flat. From this point they curve upward to their ends as well as curving slightly upward toward the edges, in imitation of a buzzard's wing. The dihedral angle is in exact proportion. The perpendicular rudders curve downward in a position to take the place of the sides of the bird's body and extend the length of the planes with the exception of a space near the center of each, which gives room for the operator's arms. The situation of these rudders is designed to prevent the machine being turned around when going sideways to the wind. The bracing system makes the machine rigid at every point. After trials as a glider a power machine will be made of it.

HARVARD-BOSTON MEETING

RECORDS OF THE MEET.

Speed—3 laps (5¼ miles) in 6 min. 1 sec., by Grahame-White (Bleriot).

Altitude—4,732 ft. in one flight by Brookins (Wright).

Duration—3 hrs. 5 min. 40 sec. in air during one flight by Johnstone (American record), in Wright machine.

Distance—101 miles 389 ft. in one flight by Johnstone (American record).

Getaway—26 ft. 11 in. from start by Grahame-White, facing a stiff breeze.

Accuracy—Stopped 5 ft. 4 in. from centre after landing within 100 ft. circle by Johnstone (world's record).

Slow Lap—3 laps (5¼ miles) in 13 min. 48 sec. (22.82 m. p. h. Ogilvie held previous record of 24.11 m. p. h. in a Wright machine), by Brookins (world's record).

Bomb-Dropping—180 points on 81 hits at battleship by Grahame-White, 100 ft. altitude.

Boston Light Course—34 min. 1 1-5 sec. over 33 miles of water by Grahame-White.

Amateur Events—Clifford B. Harmon won the Harvard cup for bomb throwing, and the cups for speed, duration and slow time for three laps. His only rival, W. Starling Burgess, was awarded second place for duration.

PRIZE MONEY DIVISION.

The prize money was divided as follows:

Grahame-White—		
Boston Light Flight....	$10,000	
Bomb Throwing........	5,000	
Speed, 1st prize........	3,000	
Altitude, 2nd prize.....	2,000	
Duration, 2nd prize.....	1,000	
Distance, 2nd prize.....	1,000	
Getaway, 1st prize.....	100	
	$22,100	
Contract price for entry	7,500	
Total		$29,600
Johnstone—		
Duration, 1st prize.....	$ 2,000	
Distance, 1st prize.....	2,000	
Accuracy, 1st prize.....	500	
Slow Lap, 2nd prize....	500	
	$ 5,000	
Brookins—		
Altitude, 1st prize......	$ 3,000	
Accuracy, 2nd prize....	250	
Slow Lap, 1st prize.....	1,000	
	$ 4,250	
Contract price for entry of both..............	30,000	
Total for Wright Aviators		$39,250
Getaway, 2nd prize.....$	500	
Willard—		
Contract price for entry	4,000	
	$ 4,500	
Curtiss—		
Speed, 2nd prize........	$ 2,000	
Contract price for entry	10,000	
	$12,000	
Total for Curtiss Aviators		$16,500
Roe—		
Contract price for entry.......		7,500
Total prize and contract money for professionals		$92,850

THE first event of its kind and the largest aero meeting yet held in America was that organized by the Harvard Aeronautical Society. Its official duration was from September 3-13, though flights were continued September 14-16.

The financial success of the aviation meet is not known officially.

Unofficially it was claimed there had been deposited in the bank $126,000 receipts for the meet. The expenditures have been about as much. Paid admissions totaled 67,241 for 11 days.

There was too much red tape in connection with the affair. Aviators found it more difficult to get to their machines than the public found it easy. Newspaper men were not treated very well, it is claimed. To get in one a reporter had to have a press badge good any place, one good somewhere, one not good anywhere, a grandstand ticket, a few ribbons and a health certificate.

Grahame-White did very well financially, outside of the prizes. He took up many passengers, and for each flight, it is unkindly rumored, his manager collected $500—in advance.

LAST TWO DAYS.

Boston, Sept. 16.—Claude Grahame-White, the English aviator, defeated Glenn H. Curtiss in a special race at Squantum yesterday, thus bringing to a close the meet which has been on since September 3.

The Englishman not only won over the American champion by a good margin, but he made better time for the distance of five and one-quarter miles than he did last Tuesday when he scurried around the course three times in 6 minutes and 1 second. Yesterday he traveled an equal distance, or three times around the 1¾ mile course, in 5 minutes 47 4-5 seconds, while Curtiss made the distance in 6 minutes 4 3-5 seconds.

Grahame-White's time for the first lap was 1 minute 56 2-5 seconds; for two laps, 3 minutes 3-5 seconds; for three laps, 5 minutes 47 4-5 seconds. The time of Curtiss for the first lap was 2 minutes 4 1-5 seconds; for two laps, 4 minutes 4 4-5 seconds; for three laps, 6 minutes 4 3-5 seconds.

By Greely S. Curtis.

In spite of many discouragements and by persevering effort James V. Martin, a special student at Harvard University and the director of the Harvard Aeronautical Society, succeeded in obtaining the co-operation first of President Lowell of Harvard and then of Mayor Fitzgerald of Boston, and subsequently several Boston business men. The idea took root and soon an experienced manager was found in the person of Adams D. Claflin.

All the aviators except Grahame-White were housed in two long canvas tents on opposite sides of the principal company street. The tents were 500 feet long by 50 feet wide and were adequate for their purpose.

One tent housed the following machines: Hubbard monoplane, Curtiss biplane, C. B. Harmon's Farman biplane, two Wright biplanes, fire apparatus, Gaines' Clement-Bayard-Santos-Dumont-Demoiselle and the Harvard biplane. In the south hangar were the Bleriot monoplane and Farman biplane of Grahame-White adjacent to the two triplanes of A. V. Roe. Next came the high powered Burgess biplane operated by William Hilliard and two more Burgess biplanes, Models B and C entered by the Burgess Company and Curtis. Next were the Curtiss biplanes, one owned by Augustus Post and the other operated by Charles F. Willard. Beyond these were housed the kites exhibited by Mr. Perkins. The Pfitzner monoplane and the Dixon dirigible were established in separate tents, provided by their owners. An A. V. Roe triplane has been purchased by the Harvard Aeronautical Society.

Perkins' Man Kite

THE FIELD.

The choice of grounds fell upon the marshland at Squantum, lying just across the Neponset River from the southeastern limits of the city of Boston. The grounds are in the form of an island; a narrow salt water creek separates it from the mainland and is bridged by a single road. While most of the island is low-lying marsh, soft and soggy even in character, there are two strips of firmer ground, perhaps seven or eight feet above the level of high tides. One of these strips was assigned to the grandstand while on the other the hangars and sheds were located.

The flying field lay to the west and north of the grandstand and included an area of irregular shape with a circumference of approximately two miles. The pylons were arranged for a circuit of one mile and three-quarters. While the field is probably the best available in the close vicinity of Boston and is adequate for the work of professionals, it is not ideal for amateur aviators under existing conditions. The space assigned for starting in front of the grandstand sloped slightly uphill and remained rough in spots in spite of the admirable work devoted to its improvement. Then the layout of the course required a turn to the left soon after starting in order to avoid the waters of Boston Harbor. Unfortunately just to the left and a few hundred yards beyond the starting line, there was a deep gully in the marsh to trap the inexpert. It was this gully which brought the noted amateur, Clifford B. Harmon, to grief on the opening day and kept him from further participation till near the end of the meet.

PROGRESS OF THE MEET.

On Saturday, September 3, the meet opened in threatening weather with a crowd of only moderate size in attendance. Grahame-White started on his victorious career by setting a good mark in the speed event as well as by establishing an excellent average in the bomb throwing, scoring 21 points in 10 shots. The American professionals, Curtiss, Willard, Brookins and Johnstone followed White into the air and gave exhibitions of plain flying without attempting any sensational manœuvers. By winning the duration and distance events on the first day Johnstone laid the foundation for his final success in these two events.

On Monday the interest was increased by the first passenger carrying, Grahame--White and Willard each taking up a lady passenger.

On Monday and Tuesday, Mr. Grahame-White continued to increase his lead in spite of the rain and foggy weather, which prevailed, so that on Tuesday evening when the meet was one-third through he led the field with a total of 14.9 points against a total of 15 8-17 points for Johnstone, Willard, Curtiss and Brookins combined. By Tuesday White led in every event except for distance, and in that he was only a single point behind Johnstone. Brookins did sensational stunts. The best records for the three first days were as follows:

Speed—Grahame-White, 6 minutes 1 seconds for 5¼ miles.

Duration—Johnstone, 1 hour 20 minutes 12 seconds.

Distance—Grahame-White, 45 miles 617 feet.

Get-away—Grahame-White, 66 feet 10 inches.

Bomb-dropping—Grahame-White, 20 trials, 56 points.

The system of scoring points was a novel one and well arranged to develop constant competition in all the events. Three points were awarded to the winner each day in each event, provided at least three entries were registered in that event. Two points were given for second place and one point for third place. In case less than three entries were made on any day, the winner received two points and the second man one point. The events in which points were to be earned were speed, altitude, duration and distance. In addition it was at first arranged to add the score made each day in the bomb-throwing, but this was subsequently changed so that only the average score per bomb thrown was added to the points won in the four events above mentioned. Each bomb hitting the deck of a full sized outline of a battleship from the height of 100 feet or more counted one point, while two funnels formed the bullseyes of the target, and a shot in them counted five.

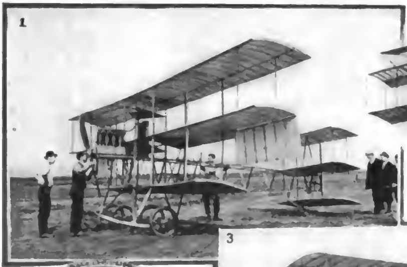
By Friday evening, September 9, when six of the nine days had been completed, Grahame-White had still further increased his lead. His score by points had totaled 33.2 against 17 for Johnstone, his nearest rival. Brookins had scored 10 points, while Curtiss and Willard were tied at 8.

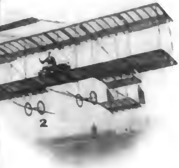
In the last half of the meet, however, the Wright operators started in consistently to earn points in altitude, duration and distance. Brookins earned 5 first places in altitude in the last 5 days, while Johnstone accumulated 17 points in the duration and distance events.

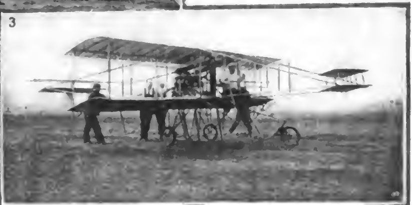
The final scores by points were as follows:

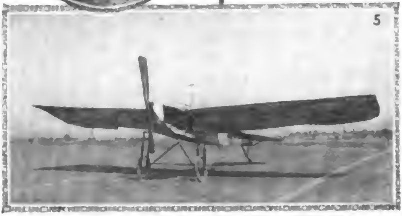
	Speed	Altitude	Duration	Distance	Bomb Average	Total
Grahame-White	15	12	11	8.5	2.2	48.7
Johnstone	..	2	13	13.	2.2	29.8
Brookins	..	15	2	1.	1.9	19.9
Curtiss	11	..	..	0.5	1.4	12.9
Willard	8	..	..	..	1.0	9.0

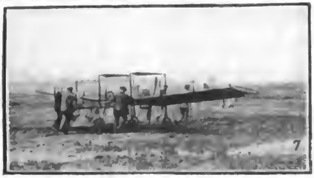
This score indicates that White had won first place in speed on five days; first place in altitude on one day; first place in duration three times; in distance three times and had scored more than two points on every bomb thrown. Johnstone scored five wins in duration and five in distance. Brookins on five days made the best flight for height. Curtiss gained the speed prize on one day

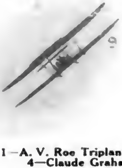












Photos by Edwin Levick, N.Y.

1—A. V. Roe Triplane. 2—Grahame-White in His Farman. 3—Hilliard in the Burgess-Curtis. 4—Claude Grahame-White. 5—G. G. Hubbard Monoplane. 6—Walter R. Brookins. 7—Pfitzner Monoplane. 8—Glenn H. Curtiss Flying New Machine. 9—Brookins Beginning a Sharp Turn.

and was second in that event on four other days. Willard won first in speed once.

The special feature of the meet was the $10,000 prize offered by the Boston Globe for a two-lap flight around Boston Light and return. The course called for distance of approximately 33 miles, almost all of which was over the water of Boston Harbor. Grahame-White made his first attempt in his Bleriot monoplane on the fourth day of the meet and covered the course in 40 minutes 1 3-5 seconds. This relatively slow time was in part due to a detour caused by the aviator's lack of familiarity with the landmarks. On the next to the last day of the meet, White made a second trial with the same monoplane and cut his time for the 33 miles down to 34 minutes. Making a fair allowance for the distance lost in the half dozen turns required, his average speed must have been over 60 miles an hour.

The only hope of defeating Grahame-White for the Globe prize lay in Glenn Curtiss' speedy flyer. The early days of the meet, however, had shown that the Bleriot with its 50 h. p. Gnome motor was faster than the Curtiss machine with its 50 h. p. 8-cylinder Curtiss engine. Curtiss had to look for a more powerful motor. This he found in the new Indian motor rated at 60 to 65 h. p. power which was owned by the Burgess Company & Curtis. An arrangement was quickly made to transfer this motor from the Burgess biplane flown by William Hilliard to the Curtiss flyer, and it was installed during the intermission of Sunday, September 11. Unfortunately there had been no time to test out the new motor and when Curtiss attempted to fly with it, unexpected carbureter troubles developed which were remedied only after two days of constant tinkering. The motor finally was put in running order on the last official day of the meet, and he was enabled to overtake Grahame-White in his speedy Bleriot. But unfortunately the delay proved fatal to Mr. Curtiss' chances for the Boston Globe prize, as the time limit expired before the motor was finally turned up. The Indian engine gave 430 pounds thrust on a spring balance attached to the Burgess machine.

Among the amateurs the most notable event was the accident to Harmon's biplane shortly after making a start on the opening day of the meet. The accident was in part due to the soggy condition of the grounds after the continuous rains. Harmon was unable to get up his usual speed before taking off, so that his machine was traveling at a comparatively slow rate when it reached the first turn. The act of turning brought one wing tip in contact with the ground, and the whole biplane was precipitated into a gully across the course which wrecked both supporting surfaces, smashed the propeller and injured the motor itself. The running gear of the machine also was wrecked so that it seemed hopeless to attempt to replace it. However, W. Starling Burgess, a fellow competitor, placed the facilities of his Marblehead factory at Harmon's disposal and returned the biplane to its owner in better condition than ever several days before the end of the meet. Harmon, however, borrowed Mr. Grahame-White's Farman biplane and succeeded thereby in winning first prize for amateurs in speed, duration, bomb throwing and slow lap.

Second prize among the amateurs was won by W. Starling Burgess in a Burgess biplane. The other amateur entries included William Hilliard in a Burgess biplane, who made two or three circuits of the course, but did not officially compete because his powerful 60 h. p. motor had not been properly tuned up before it was loaned to Mr. Glenn Curtiss. A. V. Roe, in his English triplane, and H. F. Kearny in the Pfitzner monoplane, both met with disaster on landing after short flights. The only other amateur aviator, Augustus Post, made some short straight-away flights in his Curtiss biplane, but did not enter officially for any of the prizes.

The meet was attended by many officers of the Army and Navy, as well as a large number of persons socially prominent. President Taft was a center of attraction one day and on other occasions Governor Draper of Massachusetts with his staff and the mayor of Boston added a political touch to the gathering. Thanks to Grahame-White, Mayor Fitzgerald went up in the air to a greater height than he had previously experienced.

The success of the meet as a whole is a monument to the initiative of James V. Martin, to the ability and perseverance of Manager Claflin and the able committees in charge.

Perkins' Man-Carrying Kite.

So far as known, the first time that a man has been taken up by kites for the purpose of exhibition in this country was at the Boston meet, and this stunt is now the feature of the kite exhibitions which Samuel F. Perkins has been booking at all the meets.

A series of monster kites are used, from 9 to 18 ft. tall. Up to fifteen kites are employed, according to the velocity of the wind and the weight of the man. It has been found that a man can be lifted in a wind as low as 16 miles an hour. An 18-ft. kite is first started and sent up for about a thousand feet, or until it reaches a steady current of air. Then a number of the 12 ft. kites are put on the line, spaced about 100 ft. apart. These are added to as desired until the pull is found to be great enough to carry a man.

At Boston Perkins himself went up about 125 ft. on a little wooden seat slung by ropes, as shown in the picture. The rope used to hold the kites is one-half inch in size and of the best grade that can be bought. The reel has to be very strong and well anchored. Miss Emily Willard, a sister of Aviator Willard, also went up in the kite.

Kites have been used to some extent abroad for military measures. Not long ago experiments were made in England. It is alleged that the United States Army tried man-lifting kites some years ago, and Lieut. Wise actually went up a little way, but further investigations in this direction are said to have been given up. It will be remembered that the late Lieut. Thomas E. Selfridge, in 1908, was carried up in a monster tetrahedral kite made by Dr. Alexander Graham Bell, but on this occasion the kite was towed in the air above the waters of Bras d'Or Lake, by a power boat.

Perkins has been sort of a stand-by at all the exhibitions that have been held thus far, as his kites provided something for the crowds to watch at all times, if there was any wind at all, and as those who have had the more or less pleasant experience of visiting some of the flight exhibitions that have been held, know, a great deal of the time there is nothing but the kites to watch with the wind blowing too strong for the birdmen to do any "birding."

PROPELLER DESIGN

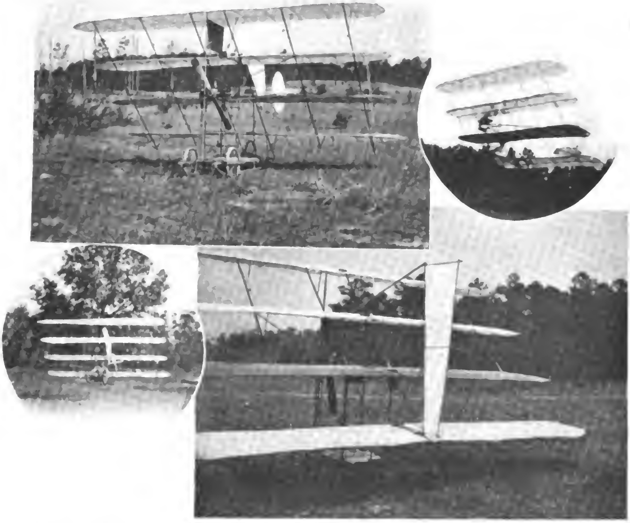
[Concluded from page 112]

have creditable reports that one pair of them recently tried strained very heavily at their moorings while lifting a weight of 780 pounds. They were driven by an engine rated at 50 to 60 h. p., but probably giving very much less during the test as it was running at only about 450 to 500 r.p.m.

In regard to details of construction, the usual number of laminations is five, but four are used in the smaller sizes and sometimes six for the largest ones. The plan form for each lamination is accurately designed and each pair for opposite blades of the same propeller are sawed out together in duplicate to exact pattern and the holes for the dowels located by templates so that the registration of these holes makes it impossible to put the several pieces together in any but their correct relation. The corresponding pieces in opposing blades are selected from adjacent parts of the same edge-grained board, thus insuring the utmost similarity of weight, grain and texture in the corresponding portions of the blades. The accompanying illustration shows a group of half laminations for a 2-bladed propeller ready to be assembled and glued.

As for the best material, we have tried many varieties of wood but have found nothing really superior to carefully selected edge-grain spruce, although we find quartered white oak, hickory and other hard woods very excellent, beautiful and durable for the smaller sizes in which a little more weight is desired or not objected to.

FLIGHT PROGRESS OVER THE COUNTRY



Curtiss Flies 129½ Miles Over Water.

On August 31st, Glenn H. Curtiss flew in his 8-cylinder machine from Euclid Beach, just east of Cleveland, to Cedar Point, near Sandusky, Ohio, air line distance of 60.5 miles in 1 hour and 18 minutes. The distance is about equal to that between Poughkeepsie and the upper end of Manhattan Island, which was one stage of Curtiss' trip from Albany to New York. The wind velocity was 12 miles per hour.

The U. S. Hydrographic Office at Cleveland figured the actual distance traveled one way as 64¾ miles. This gives a speed of 49.8 miles per hour on the outward trip.

BEATS PIGEONS ON HOME TRIP.

On September 1 the return was made but in much slower time, 1 hour and 41 minutes being consumed. The return was made, for part of the distance, in the rain, which stung the aviator's face. Some homing pigeons which were released at Cedar Point took 2 hours and 54 minutes to make the trip.

Euclid Beach and Cedar Point are amusement resorts. The flight was made possible by the Cleveland *Press*, which gave a prize of $5,000.

Flying With Four Horsepower.

We give some photos of aeroplane experiments of M. B. Sellers in Kentucky. One of the pictures shows a rear view of the machine with a vertical rudder which can be made to assume a screw shape as described in article on Lateral Stability in May, 1910, AERONAUTICS. This was used long enough to prove the correctness of the principle. Note the keel, rudder and equilibrium plane as originally designed and now used. The other pictures show machine in flight. In these flights the Huthell & Chalmers opposed engine was used. Six ¼ in. auxiliary exhaust holes were bored in each cylinder, increasing the h. p. about 15 per cent. The brake h. p. before boring holes was about four. An Elbridge 2 cyl. 10 h. p. special motor has been ordered.

Harmon's Flight Across L. I. Sound.

Clifford B. Harmon made his long promised flight across Long Island Sound on August 20. He started from the aviation field at Mineola about 6:30 o'clock. Thirty minutes later he landed in Greenwich, Conn., in a field next to the estate of his father-in-law, Commodore E. C. Benedict, an airline distance of 19½ miles.

Mr. Harmon was unhurt, but his Farman machine was damaged. The flight won for Mr. Harmon the trophy offered by *Country Life in America* for the first successful aeroplane flight across the Sound. Before starting on his trip across the Sound he made a flight with Charles K. Hamilton as passenger to test out his machine and to study the air conditions.

After making several laps he landed and announced that he would start out to win the trophy. The wind was blowing about fifteen miles an hour. In the flight to Roslyn, where he reached the water, the flying was over bad country. It was a struggle to keep right side up crossing Hempstead Bay, but he reached the Larchmont Yacht Club in safety and turned over the vessels in the harbor there at the international motor boat meet. From here he flew up the Sound to the island just in front of his father-in-law's estate, landing on a sandy beach just across an inlet, and came down in tall grass, after fouling some telephone wires. That accounts for the wrecked machine.

Novice Flies 28 Miles Cross Country.

William Evans, of 817A East 15th street, Kansas City, Mo., was able to fly 28 miles across country on his second day's experiment with the 30-foot Greene biplane fitted with an Elbridge four-cylinder engine. The first day he received the machine he made several flights back and forth the length of the half-mile field, with a propeller which was not designed to give a great deal of thrust. The next day he changed the propeller and made his 28-mile flight across country. Gliding down, he could not pick his landing and broke the front control. Percy Haslett, of Alameda, Cal., and a man named Jenes, of Tombstone, Ariz., which latter ought to be a good place for aviators, have bought Elbridge engines, so there must be something doing.

The Greene aeroplane which Roy Crosby, of San Francisco, bought has now been taken over by the California Aero & Supply Co.

The Latest Wright Model.

At the Asbury Park meet the first public test was made of the new long distance Wright. The machine is very similar to the standard type, with the rear horizontal surface; practically the only change being in the fact that the horizontal rudder in front is left off. In the place of this, the warpable horizontal tail serves to control the motion up and down. The advantage of this arrangement is that there is nothing in the forepart of the machine to be caught by sudden puffs of wind. As heretofore constructed, wind striking the front horizontal rudder acted with a powerful leverage on the machine, due to the distance of the rudder in advance of the main planes. No such effect is experienced with the horizontal rudder at the rear of the apparatus.

The forward small vertical planes have been preserved in the new machine and are mounted in the framework of the skids. This rear horizontal surface is rigidly guyed to the outriggers for the forward third of its length fore and aft. From one-third back it is flexible and warped up or down, for steering up or down respectively, by crossed wires from the usual lever.

The planes spread 39 ft. (the older machines were 41 ft. and the government flyer was 36 ft.). The engine has greater bore than usual, being 4⅜ by 4. The weight is around 800 pounds.

Wheels, flexibly mounted, are fitted to this machine, as well as to some of the other machines.

The machine is faster and can carry more weight. It has not, however, the quickness of action that the others have, and is not quite so well adapted for cutting fancy figures, though to the layman there seems to be no difference.

Constant Flying at Dayton.

There is almost constant flying at the Dayton camp, which is proving of great interest to all who have the opportunity of seeing it. P. O. Parmelee is a new Wright aviator. The Wright company has purchased a section of land in the west end of the city, and on the 7th instant broke ground for a group of buildings which are to form the new factory. A double force of men are now on the first building, containing 14,000 sq. ft. of floor space which is to be used as the assembling room of planes and frames. The factory plan is of course of the most improved type, constructed of steel, brick and cement.

Harmon Changes His Farman.

Clifford B. Harmon's Farman machine, which was badly wrecked at Boston on the opening day of the meet, was repaired in record time and altered so as to make shipping and repairs less troublesome than heretofore.

While the original dimensions and curvatures of the Farman biplane were retained, the wings were changed so that they are detachable from the central body in much the same manner as the Burgess-Curtiss biplanes are arranged. The surfaces can thus be packed in a space 12 ft. long, instead of requiring 35 ft. of space as before.

The alteration was made by the Burgess Co. & Curtis. By rushing the force on September 4th and 5th, it was possible to ship the new planes complete on September 8th, the time required having been four working days. The job was undertaken on a Saturday night, and there was no opportunity to obtain materials or outside assistance owing to the approaching Sunday and holiday. The men also had been given a vacation, with opportunities to attend the Harvard meet, as reward for several weeks of strenuous work. It thus became necessary to recall the force as far as possible by telegraph and engage Messrs. Wilson & Silsby, the Boston sailmakers, to work overtime preparing the cloth for the surfaces.

Latest Curtiss Change.

The Curtiss aeroplane used at the Boston-Harvard aviation meet by Glenn H. Curtiss presented a changed appearance from the machine formerly used by him.

Although the same engine was used as in his Hudson Flier the machine was altered to give it more speed and cut down head resistance.

The following changes were noticeable in the Curtiss machine:

Camber of planes slightly less than in old style. Same surface as in Hudson-Fulton flyer. Ailerons, four, forming rear of outer sections of upper and lower planes, working upward and downward and not down only as in Farman machine; less head resistance because behind planes; normal position downward toward rear in line with rear of planes which brings them parallel to current of air passing over and under plane surfaces; front control is a single surface, with diamond-shaped vertical plane set stationary half above and half below. Same controls otherwise and same chassis. Outer sections of wings covered both sides. Middle sections covered one side.

Woman to Fly Curtiss Machine.

Miss Blanche Scott, the young lady who recently completed a trans-continental trip in an automobile and was a passenger in a flight with C. F. Walsh in California, is expected to make her debut at flying a Curtiss machine during the exhibition flights in Chicago, preliminary to the start of the Chicago-New York race.

New Design Biplane.

A new type of biplanes is being experimented with by James B. Slinn, of Chillicothe, Ill., in which the forward control is done away with, using the upper plane for this purpose. The lower plane is of less spread than the upper and shorter fore and aft. The upper plane spreads 27 ft. by 5½ ft., and the under one 15 ft. by 3 ft. Allowing for material cut away for propeller the supporting surface totals about 160. The rudder is 3 ft. by 1 ft. Weight without pilot 340 pounds. The machine is mounted on a 3-wheeled chassis. Materials, spruce and bamboo. An engine of own make will drive a 6 ft. propeller placed in the rear.

A man named Cooley is building in Rochester a monster monoplane of 80-ft. spread. It resembles nothing that has yet appeared in the aerial world. Two Elbridge engines drive two propellers.

The Curtiss exhibition company now has a Curtiss machine traveling as a "dead exhibit" around the country to fairs and wherever there are no facilities for flight. Moving pictures are shown and a lecture given by Carl H. Carson.

New Greene Aeroplane.

A biplane built by Dr. William Greene especially for cross country flying and long distance racing is now ready. It is of the same general style as other Greene machines, such as already described in detail in AERONAUTICS. It has a spread of 30 ft. with a chord of 7½ ft. and a curve depth of 2⅞ in. A six-cylinder Elbridge engine is installed which actually gives on a Prony brake test 61½ h. p.

Two sizes of Greene machines are now being marketed with prompt deliveries, 30 and 37 ft. spread respectively. All the Greene machines are supplied with Elbridge engines and the Farman type landing arrangement, 20-in. wheels, 3-in. Palmer tires, Bosch magneto and El Arco radiators. On the large machines the wheels are 24 in. in diameter. What are called "practice skids" are being used in trial flights. These are fastened to the regular skids, as shown in the photograph. The large machine has a chord of 6 ft. 7½ in. and a depth of curve of 4¼ in. The ailerons, 10½ ft. by 29 in., are attached to the rear struts instead of being between the surfaces as in the Curtiss machines. These ailerons are operated by the usual shoulder control.

Instead of using sockets as formerly, aluminum castings are now employed for connections. The surfaces are of Irish linen with a special preparation which is put on after the surfaces are in place. The cloth is stretched as tight as a drum head and has a breaking strain of 71 lbs. per square inch. The front control is a little smaller than that employed in the former machine (of which full drawings were published in AERONAUTICS.). Also, there is a flap attached to the rear of the back horizontal surface which works in conjunction with the elevator through crossed wires. The whole rear horizontal tail can be quickly shifted to various angles of incidence, merely by loosening a metal clamp around the short vertical posts at the extreme end of the outriggers and reclamping at the desired place on the post.

Baldwin Flights at St. Louis.

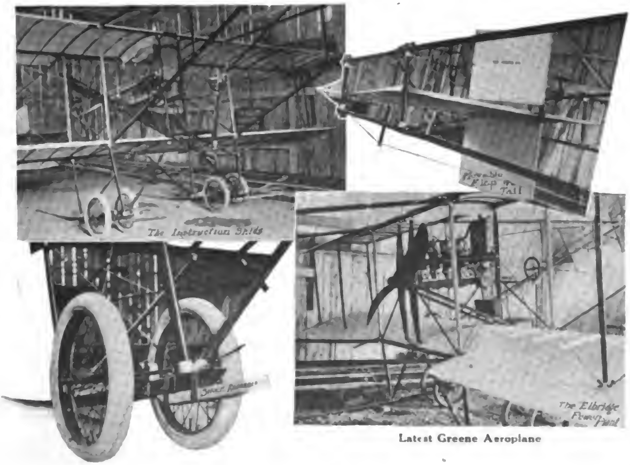
St. Louis, Mo.—Capt. T. S. Baldwin made some fine flights along the river front on September 10-12. These flights were his first real ones at an exhibition and no one can kick at the "young man" now. In one of these, taking 10 minutes, when he crossed over three and flew under two bridges while in the air. Including the time he was on the ground between the flights, it was thirty-six minutes from the time he started until he landed on the aviation ground again.

Hill, Beachey has assembled the Gill machine bought by T. W. Benoist, of the Aeronautic Supply Company, and made first trials.

Selfridge Monument Erected.

A monument to Lieut. Thos. E. Selfridge has been completed, and was erected over the grave by E. A. Selfridge, father of Lieut. Selfridge. There will be no unveiling ceremonies or dedication of the monument. It has been a tribute of the family throughout, and will not be attended by any public recognition. The inscription on the tablet is as follows:

FIRST LIEUTENANT
THOMAS E. SELFRIDGE,
1ST REG'T. FIELD ARTILLERY,
U. S. A.
KILLED IN THE SERVICE
OF THE UNITED STATES
IN AN AERODROME
ACCIDENT
SEPTEMBER 17th, 1908.
AGED 26.



Latest Greene Aeroplane

AT THE MINEOLA AVIATION GROUNDS

Review of the Month's Flying.

The past month at Mineola has not seen quite so much flying as heretofore since Harmon's flight across the Long Island Sound, as the machine was damaged on that occasion and later was shipped to Boston. Capt. Baldwin has been away and H. S. Harkness with his Antoinette has been doing nothing more than running over the grass, getting used to the grounds and machine, after being out of the game for some months. Joe Seymour has been flying constantly right along.

Tod ("Slim") Shriver has brought out a new machine of a general Curtiss type, in which the ailerons are outside of the main cell and attached to the rear supports. Equipped with a Kirkham six-cylinder engine, he has been making some good short flights. The machine was constructed by Mr. Shriver for Howard Dietz.

The second week in September, P. Brauner & Co. brought out one of their stock machines of a general Curtiss type, 30 x 4½ ft., fitted with a British-American 26-h. p. stock automobile engine driving a Brauner 6 ft. diameter 4½ ft. pitch propeller, giving at 900 revolutions 185 lbs. thrust. Some short flights have been made in it by D. Masson, who was mechanic for Paulhan when he came to America. The front elevator is a single surface. Equipment includes the El Arco radiator, Bosch magneto and Palmer tires.

Frank Van Anden has another biplane ready for trial, fitted with a Cameron air-cooled automobile engine with auxiliary exhausts. It would be of interest to know how this cools and to see with what success flights are made, as the engine is rated at but 24 h. p. The running gear is similar to Capt. Baldwin's, with the front wheel off the ground. Pennsylvania 20-in. wheels and 4-in. tires are used. The motor has a Splitdorf magneto and Breeze carburetor, as generally supplied with Cameron engines.

Dr. H. W. Walden is building a shed of his own and is progressing with the remodeling of his wrecked monoplane. The new one will have Pennsylvania 4-in. tires and the holes in the ground won't be so effective.

An innovation in cooling systems is employed by George Russell and J. J. Frisbie. Two small El Arco radiators are used, placed one on either side of the operator, where they get all the air there is coming. These work very satisfactorily this way, and the head resistance does not seem to have been any objection.

G. E. DeLong, designer of the Elbridge engine, has started a training school, using a Shneider-built Curtiss-type aeroplane, which he purchased some time ago. E. F. Gaskell, 2308 Seventh avenue, New York, and F. E. de Murias, Babylon, L. I., are the first pupils. Wisely enough, the school does not undertake to pay the damages sustained in trials.

W. L. Fairchild is out mornings and evenings practicing with his big monoplane, fitted with an Emerson six-cylinder engine, about which he is enthusiastic. It drives by a chain two propellers.

The George Russell machine has had its power plant changed over from a Curtiss to a four-cylinder Elbridge. The first part of September he gave exhibitions on Staten Island. One of the most successful experiences he had was a collision with a cow. So far as we are able to ascertain, this is the first time that an aerial milking has been attempted.

Sam Barton, of 238 Dumont avenue, Brooklyn, is putting together in the Aeronautical Society's sheds a small biplane with a two-cylinder Elbridge engine. This more or less resembles a Curtiss machine. The elevator and the horizontal tail will work in conjunction. The machine is only partially assembled thus far. Hartford tires are being used on specially built home-made wheels.

Miss E. L. Todd has a Rinek eight-cylinder engine.

Nicholas Rippenbein is completing the assembling of a light Farman type machine which was bought from Fred Shneider. The ailerons in this machine are between the surfaces, and instead of being hinged at the struts and moved up and down, are mounted on a shaft running fore and aft between the main surfaces. At the end of the shaft is a grooved pulley over which crossed wires run.

Harry Chandler, of the Auto & Aeronautic Supply Co., and Glenn Ethridge, both of Westbury, L. I., are building a biplane of radical construction as regards sockets, engine beds, controls and angle. This is now ready for trial. The equipment includes an Elbridge four-cylinder engine, A-Z radiator and tank, and Hartford tires.

Philip W. Wilcox, of the Columbia University Aero Club, has had bad luck. His first trial some two months ago, resulted in smashing the running gear on the ground. Charles K. Hamilton flew it next time and broke up the landing arrangement again. After it was all fixed up anew, stronger, and with big 4-in. Pennsylvania tires, Wilcox attempted flight himself and succeeded at the first jump, with all the power of the Rinek eight-cylinder engine behind him. For some little time flights were made before the machine was reduced to a wreck. He is now going at it again and will build two machines. With a Rinek propeller, 7½-ft. diameter by 4-ft. pitch, the engine gave over 350 lbs. thrust standing.

The Garden City Co., which erected a fence and grandstand around the grounds and now charge admission whenever there is a sufficient crowd of sightseers, has established a system by which the aviators receive a certain portion of the profits, proportioned according to the extent of the flights made by each.

The erection of the fence, the independent attitude assumed by the Company and the alleged nonfulfillment of promises made by it has resulted in considerable friction. The Aeronautical Society has given the Aero Club of America an opportunity to join in a protest and issued a statement of which the following is a part:

August 22d, 1910.

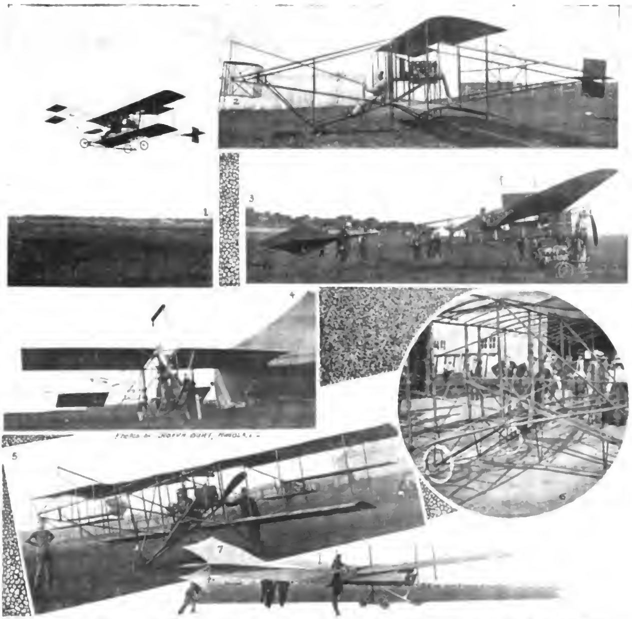
THE GARDEN CITY COMPANY,
60 Wall Street, New York City, N. Y.

Gentlemen:—When you recently (without our consent) erected a high fence around the property which you leased to this society at Mineola and constructed a grandstand and ticket office, you argued it advantageous to us and promised to account for all funds and see that conditions were improved generally. You now refuse to account for what you have collected and spent and are continuing to force the public to pay money to you to witness the flights of members of this and other clubs on your property. You are also collecting money for other privileges, such as stands, sign spaces, etc., and the public are led to believe that we are the interested parties, although we never have been and do not wish to be interested in the receipts of your enterprise.

We object to this method of exploiting our members. Had you turned these matters over to a joint committee representing all interests, the members and their friends would not be repeatedly interfered with by the representatives of your real estate, and everyone legitimately interested in aeronautics would have been better satisfied.

In view of the foregoing we are obliged to notify you that if conditions are not improved we shall be obliged to restrain you from further interference with our rights on the property.

THE AERONAUTICAL SOCIETY.



1.—J. J. Frisbie, Flying. 2.—Shriver-Dietz Machine. 3.—W. L. Fairchild's Monoplane. 4.—E. E. Burlingame. 5-6.—Frisbie Machine. 7.—Harkness' Antoinette.

C. S. Peets and D. C. Teetor, of the Hudson-Fulton Automobile Co., at 247 West 47th street, New York, will shortly begin trials at Mineola with a biplane, principally on the lines of a Curtiss, with Farman type running gears. Messrs. Peets and Teetor were members of the West Side Y. M. C. A., aero class of 1909, with Wilbur R. Kimball as instructor.

Wilbur R. Kimball is about to begin the construction of an entirely new type of machine, after a year of laboratory work and experimenting with the object of combining lifting power and the propelling force of propellers in connection with planes. A model has been constructed and successfully flown that shows remarkable properties of equilibrium and ease of control, and an increase in the thrust obtained from propellers.

Frisbie New Mineola Star.

J. J. Frisbie has been the sensation of the Mineola field. He did not spend any time running around the ground, but attempted flight the first crack out of the box, and has been flying regularly every day, with the exception of the first half of September, when he arrived at Rochester. He has proven to be one of the most apt students of flight that has been seen at Mineola.

TRIALS AND TRIBULATIONS.

Frisbie first appeared in the aviation camp at Mineola early in the spring. He had a few hundred dollars and the determination to become an aviator. Someone offered to sell Frisbie an aeroplane, all right from the ground, splendid motor, etc. And Frisbie spent weeks that ran into months waiting for the demonstrating flight,—which never came. After a long time a machine was alleged to be assembled and a thing called an aeronautic motor was installed. The outfit collapsed after a run estimated at eighteen seconds. Frisbie had spent thirteen weeks and all his money waiting for it.

He returned to Rochester with five cents in his pocket, a number of obligations, among them the support of a family. About the only thing he had left was determination to win out, and a lot of friends.

After further weeks of trial he secured enough backing to insure the building of his own 'plane, and he ordered an Elbridge engine. In less than a month he was ready for the air, and twenty-four hours later he had made five short flights.

If the affair had been less serious, Frisbie's first flights would have been humorous. Advised not to leave the ground for at least a week, Frisbie started virtuously to run across the field to learn the use of the different controls, but he reckoned without the thrust of the 40 h. p. two-cycle engine. It never occured to him to throttle down, so in a few seconds he was bounding across the field at a terrific rate of speed; a piece of rough ground jarred his arms enough to affect the front control, and less than half a minute from the time of all his good resolutions he was in the air, 20 or 30 feet above the ground. He wavered, he wobbled, the machine slanted from the torque of the propeller; Frisbie had presence of mind to straighten up and to try to get nearer the ground. No difficulty about that; he pushed the control forward half an inch and the machine dove for the ground like a falling skyrocket. Frisbie yanked back on the control to avoid the ground, and started up on an angle that suggested an attempt to loop the loop.

He landed unharmed, however, and started out again. Day after day he kept at it, practicing whenever the breezes dropped below 10 miles an hour. In two weeks he had successfully accomplished a 10-mile cross country flight, flying two or three times around the field as a preliminary, and then, without descending, starting out across country and flying over the polo field at the Meadow Brook Club, circled over the Motor Parkway, passed over Westbury, and returned to the field in 14 minutes from the time he started.

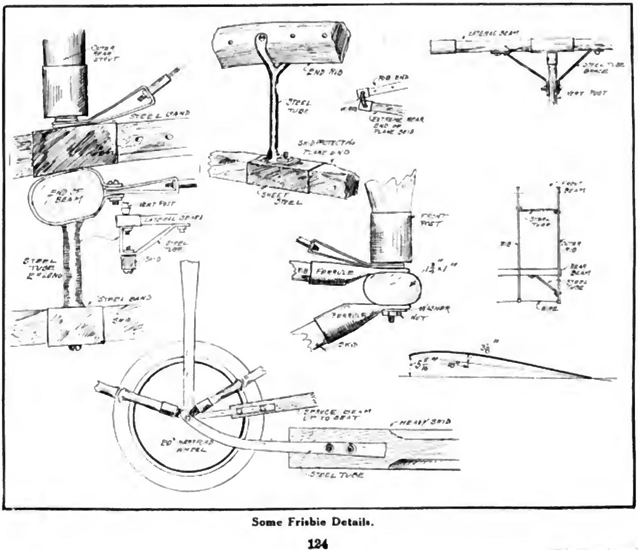
On another occasion, when Acting Mayor Mitchell of New York visited the field, Frisbie made several flights in the rain. He also has made a flight of some miles after dark, and safely carried his son as a passenger on one of his early trips.

At Ontario Beach Park, near Rochester, N. Y., on Labor Day, J. J. Frisbie made his first appearance as a professional aviator, just about three weeks since he made his first tentative flight at Mineola. There Mr. Frisbie, anxious to make good before his backers and fellow-townsmen, tried one of the most difficult things so far attempted by any aviator. The only place from which he could get any start was a bit of lawn about 200 feet wide, bounded by poles, a hotel, a merry-go-round, and sideshows; in front steep rollers piled themselves on the beach, driven by a high wind. Not counting the people who crowded around the machine, the actual space between material obstructions through which Frisbie had to guide his 'plane was exactly 40 feet. Minor embarrassments were two asphalt sidewalks he had to cross, each high enough above the level to smash the wheels on his first attempt to rise. Four times he started, and four times dropped into the lake, but the fifth time his nerve and perseverance triumphed and he rose safely to a height of 50 feet and sailed around the park, only to be again obliged to land in the surf because the dense crowd left not a foot of space on the shore.

After being fished out of the water the first time, the gasolene valve was found to be closed. The gasolene was turned on, and off the motor started. The Atwater-Kent coil was changed the next day for a magneto. One trial resulted in a smash on the sand, and he had to fly the next time with a split propeller patched up with tin on one blade. Another time the motor short-circuited itself just as he was out over the lake. The next time the propeller was smashed when it struck the water. To prove that he can fly, Frisbie decided to stay in Rochester until he could either fly across the city or cross Lake Ontario.

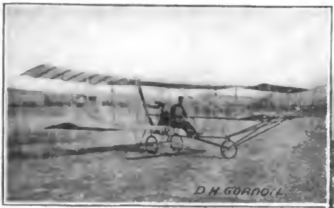
The Frisbie Machine.

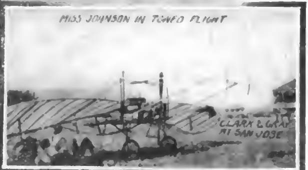
The machine of J. J. Frisbie is a close copy of the Curtiss. The lower plane has 26¼ ft. spread by 4½ ft. fore and aft. The top plane overhangs on each side 32 in. They are spaced 4½ ft. apart. The bamboo outriggers front and rear extend 12¼ ft. The double surface front control measures 6 ft. by 28 in., surfaces 2 ft. apart. The horizontal tail is 6 ft. by 28 in. The vertical rudder is 34 in. high by 28 in. the other way. The ailerons are 92 in. spread by 30 in. fore and aft, extend 8 in. in front of the struts, and are pivoted on the outer front strut. The engine is an Elbridge 4-cylinder, 40 h. p. Two El Arco radiators are used, situated one on either side of the operator.



Some Frisbie Details.

FLYING OUT ON THE PACIFIC COAST





By Cleve T. Shaffer

Flies With 5 H. P.

DONALD H. GORDON, of Bostonia, Cal., has a biplane with which he has been doing some remarkable work. The machine has a 5 h. p. cyl. motorcycle engine, and with this motor and a geared down propeller of his own manufacture, he claims to have made flights of up to 500 ft. in length. As the weight of the machine complete with operator is 380 pounds this would give a load carried per h. p. of 76 pounds, which is remarkable. The machine in general construction and detail reminds one of the Roe triplane, inasmuch as the same low h. p. is used, and it has the same inverted triangular fusilage and general appearance. Following is a description: Top plane 26 ft., lower 24 ft., chord 4 ft. Distance between planes 4 ft. 4 ins. Angle of incident same on ground as in flight, about 7°. Planes are constructed with a view to automatic balance, and so far Mr. Gordon has never had an occasion to use the lateral stability device which he has also placed on the machine, even when flying across a 15-mile wind. He claims the machine would tilt to 30° angle when struck by gust, but would right itself automatically. Camber of chord, 2¾ ins. in 48 ins. Planes in three block sections, semi-circular rudder operated by foot lever, double front elevator, 32 sq. ft. area. Power plant, 2 cyl. Curtiss motor-cycle engine, cyls. 3¼x3¼, weight 78 pounds with batteries and coils. Propeller, 6 ft. diameter, 5 ft. 8 ins. pitch, cedar and spruce of Mr. Gordon's own manufacture. The motor is speeded to 2,100 revolutions and drives a geared down propeller at a little over seven hundred. Weight of machine complete 240 pounds. Mr. Gordon's weight is 140 pounds. A three-wheeled chassis is used with a novel type of suspension of the two rear wheels. The two-leaf spruce strips with axle attached in center are pivoted at the front and are attached to skid at the rear by springs. Mr. Gordon's longest flights have so far been from 450 to 500 ft., which is the longest distance engine will run at full speed without overheating, which of course causes it to slow down. He is now putting in a cooling fan and exhaust ports to keep the motor cool for longer flights. He is also installing a 7 ft. propeller to run at a slower speed than the present one. The fields are so rough around his vicinity that he claims that it is very hard to build a machine capable of standing the racking. He has had very little trouble, however, beyond breaking a wheel or two. Mr. Gordon has also had considerable experience with gliders, having made in the neighborhood of 50 flights of about 150 yards in length. In all of these, he says, he never had the suggestion of an accident and hardly broke a stick, reached heights of 20 ft. and flew in winds about 15 miles per hour. He uses an inclined rail with his glider.

J. E. Clark, of San Francisco, has a biplane of the new Farman type near San Jose, Cal., in which he is said to have made some very good flights, the longest of about a mile. The machine is 33 ft. spread on the top plane and 21 ft. on the bottom, by 6 ft. 3 in. chord, 36 ft. fore and aft, single laminated ribs. A Sommer type chassis is now used but will be changed to the four wheel Farman type. An Elbridge 40-60 h. p. engine drives direct an 8 ft. diameter propeller, 4 ft. pitch, thrust has not been measured. Bosch magneto is installed. Lateral control is by shoulder brace connected with semi-circular ailerons between the ends at rear of planes, and the rest of the control is similar to the Curtiss with the usual wheel. Curvature of ribs 1 in 14. Angle of incident on the ground about 6 or 7 deg.; 5 deg. approximate flying angle. Planes are covered with Naiad No. 6 laced on in panels. Weight of machine complete 530 pounds.

Charles Bradley, of the Pacific Aero Club, an account of whose large, high pitch, propellor test was in the September issue of AERONAUTICS, got off the ground, for a short jump, with his biplane on September 5 in the presence of your representative. The clutch would not hold, however, machine came down and ran into a ditch, the axle bent in a semi-circle but the "Camsc" wheels did not "dish."

Mr. Bradley said that all he wanted to know was if he could get off the ground with his large propeller and small horsepower, and as he was successful in this, and the machine was of rather crude construction he demolished it and will now begin work on a new one.

By Prof. H. La V. Twining

In January, 1910, after the Los Angeles midwinter meet, Chas. K. Hamilton went to San Diego, Cal., and spent three days flying on Coronado Island. On this occasion he flew across the bay and down the beach into Mexico and return. At this time Chas. F. Walsh, of San Diego, had a monoplane which he attempted to fly. Instead of flying, the machine ran into a fence and became a total wreck. By May 2, 1910, Mr. Walsh had constructed a biplane of the Curtiss type with which he is flying. Since that time he has made some 200 flights of 500 feet to 1¼ miles in length, reaching an altitude of from 10 to 80 feet. Mr. Walsh has modified the Curtiss method of control, using a design of his own devising. The machine is equipped with a 40 h. p. Elbridge engine. The aeroplane weighs 380 pounds and has 400 sq. ft. of surface. It spreads 40 feet from tip to tip.

Mr. George Duessler has been making short flights in his biplane at the Los Angeles aerodrome where the Aero Club of California has its headquarters. The flights average some 300 feet. On one occasion he covered 495 feet, just missing the winning of the Knabenshue cup.

The winner of the cup must fly 500 feet under power in a machine of his own construction. He must also be a member of the Aero Club of California. The last of August Mr. Duessler blew out a cylinder head and is now repairing his engine. J. J. Slavin is also having trouble, but will soon be in shape to again try for the Knabenshue cup, after his accident of a few weeks ago. On this occasion he rose from the ground at too sharp an angle, to an altitude of 25 ft., where the machine lost headway, resulting in a crash to the ground. Several members were broken and the running gear was smashed. Mr. Slavin escaped unhurt. Slavin has a 3 cyl. 30 h. p. Elbridge engine.

On August 28 the Cannon brothers towed their Curtiss biplane behind an automobile. The machine rose some 10 ft. above the ground where it was maintained by use of its controls. This furnishes excellent practice, and as soon as they get their engine installed we can expect some flying. On several of their towed flights they carried a passenger.

The Twining ornithopter, number 3, was given a trial last week. This model weighs 115 pounds and the operator 150 pounds, making a total weight of 265 pounds. The wings are 12 ft. long by 4 ft. wide, giving about 100 sq. ft. of surface. More powerful leverages were used in this model and a good up stroke of the wing developed.

The experiment developed a slight drive along the ground, and on one occasion it rose bodily from the ground to the height of one inch, upon the down stroke of the wings. Early in the trial one wing was broken so that it became flexible around its front edge. In this condition the wing drove the machine forward but lost in lift.

This model is a great improvement over model No. 2, a lift of 265 pounds being obtained as against 120 pounds in the other one. Larger and stronger wings will be constructed and another trial be made this fall.

Hamilton Injured.

Chas. K. Hamilton, flying for his own account a brand new machine on the style of a Curtiss, but fitted with a 100 h. p. engine built to order by Walter Christie, met with an accident while flying at Sacramento, Cal., on September 9. In a previous flight the machine was damaged, but the aviator unhurt. He was burned by the water from the radiator and severely cut and bruised. It is believed there will be no serious results.

INCORPORATIONS

Fisher Aero Craft Construction Co., of New York, New York; manufacture, deal in and lease air crafts of all kinds; capital $100,000. Incorporators, P. J. Fisher, Encoland S. Bates, Hieronimus A. Harold, all of No. 135 William St., New York City.

The Standard Airship Co., Cleveland, T. P. Howell and others; $5,000.

Frankford, Ind., July 15.—The La Marr Aero Co., of Frankfort, Ind., organized to manufacture aeroplanes, $50,000. Officers are W. B. Adams, president; Perry Gable, secretary, and Fay Cress, treasurer.

The Standard Airship Co., of Columbus, O., $5,000, for the purpose of building airships. The company will build and sell aeroplanes constructed under patents held by H. J. Sharp. Incorporators of the company are T. P. Horrell, C. A. Ricks, A. Y. Gowen, W. C. Saeger and G. B. Collins.

Illinois Aviation Co., Chicago; manufacturing amusement devices; capital, $1,400. Incorporators, Leon S. Alschuler, Gabriel J. Norden, Chas. W. Steefel.

MacLeod Multiplane Co., Borough of Richmond, N. Y.; manufacture and sell aerial machines; capital, $10,000. Incorporators, Malcolm MacLeod, 268 Columbus Ave., New York City.; John T. Oates, 703 Bay St., Stapleton, N. Y.; James E. Forrest, 276 56th St., Brooklyn.

The Aerovehicle Co., of Atlantic City, N. J., to manufacture and sell all kinds of vehicles for aerial transportation; $125,000. Incorporators, James R. Greig and Samuel C. Fenner of Philadelphia and Eli H. Chandler of Atlantic City.

Aerocraft Co., Chicago, Ill., $10,000; general manufacturing, commercial, exhibition and transportation business; Benjamin I. Gates, H. H. Abernathy, J. J. Zinn.

American Aeroplane Manufacturing Co.; New York; manufacture and deal in aeroplanes, gliders, motors, etc.; capital, $100,000. Incorporators, Benj. E. Freed, 506 E. 188th St., New York City; Peter J. Minck, 55 Beaver St., Brooklyn; Stuart J. Lebach, 50 Morningside Ave., New York City.

Atlantic City Riviera Parkway Ocean Pier Co., Atlantic City, N. J.; to acquire premises to construct and operate aeroplanes, aerial transportation systems, airships, etc. Samuel J. Clark, Raymond B. Thompson and Graham Shaw incorporators. Capital stock $100,000.

Aerial Manufacturing & Supplies Co., New York; manufacture aeroplanes, gliders, automobiles, hydroplanes, etc.; capital, $50,000. Incorporators, Samuel Shethar, Great Neck, Nass. Co., N. Y.; John Loughran, 155 2d Ave., Long Island City; Chas. H. Stoll, 55 Liberty St., New York City.

The Curtiss Exhibition Co., $20,000, Hammondsport, N. Y.; promoting exhibition flights with aeroplanes and the selling of aeroplanes for exhibition purposes. Directors, Glenn H. Curtiss, Jerome S. Fanciulli and Monroe Wheeler.

Bath Motor Mfg. Co., Bath, N. Y., $300,000, taking over Kirkham Motor Co.

Charliss-Wendling Automatic Aeroplane Co., of Houston, Tex., is being organized by C. F. J. Charliss and A. Wendling to manufacture aeroplanes.

The Zodiac Sky Advertising Co., Narragansett Pier, R. I. E. Stuart Davis is president and Sydney S. Breeze of New York is vice-president and general manager. The directors of the company are Edward S. Beade, James M. Satterfield and Benjamin Burgess Moore.

MEETINGS COMING, GOING AND GONE

AT SHEEPSHEAD BAY

Asbury Park Meet Concluded.

The flying by Brookins, Hoxie, Coffyn and Johnstone proved so satisfactory to the Asbury Park committee that the series of flights were continued up to and including August 27th. The meet began on August 10th.

To cover fully the various stunts performed by the Wright machines under the guidance of such skillful aviators would take a number of pages of the magazine. From 3 o'clock in the afternoon till almost dark there was something doing every day. Flights were made out to the ocean and back, to various nearby resorts; on one occasion a landing being made on the Deal Beach Golf Links, the machine was started again and the return made. This flight was by Brookins and Coffyn, a passenger flight.

NEW WORLD'S RECORD.

Walter Brookins, whose nose was seriously damaged when his machine was wrecked against the grandstand on the opening day, was not out of commission long. On August 23d he shattered his former record for a complete circle by making one in 5½ seconds. Johnstone made numerous high flights, going up to 3,000 feet, and many of the flights lasted 30 to 45 minutes.

4,000 FEET HIGH.

On the 19th Hoxie and Johnstone each made moonlight flights with none for spectators save the birds, and they were asleep. In the afternoon of the same day Hoxie was up for 52 minutes, reaching an altitude of 4,000 feet.

AERONAUTICS' EDITOR RIDES.

On two occasions novices were taken up for rides, only "joy rides," as the aviators call flights of ten minutes or so. The publisher of AERONAUTICS, E. L. Jones, was one of these two lucky individuals, and the star reporter on the New York *Sun* the other. Brookins took the former on the latest machine, minus the front control and mounted on wheels, up to 500 feet, sailed around the field a number of times, made two of those short circles for which Brookins is so famous, then shut the motor off and slid rapidly to the ground.

It actually makes one's heart almost stop beating to see Brookins start his aeroplane downwards, tilt up on one corner and then make a hole in the air like a cork-screw in a cork; but to be a passenger on one of these whirls, find yourself slipping sideways off the seat, with the green grass showing in a nice little square patch down below through the end of the plane, is *some* experience. The passenger is likely to wonder if it is not possible that on this one occasion a puff of wind may carry the machine just a degree or two beyond 90, with a finale in Davy Jones' locker.

This is real flying and a passenger's sensation in a flight like this varies considerably from those in a straight-away a few feet off the ground. After such an experience the passenger is likely to have considerably more respect for the capabilities of the expert bird-men. Yet one must consider that this was but a commonplace "joy ride," for the intrepid Brookins is doing these stunts day after day, in his efforts to "demonstrate," as he says, "the practicability and safety of the Wright aeroplane."

Sheepshead Bay Meet.

BY FRANK S. TILLMAN.

New Yorkers were given their first real aviation meet the last two weeks in August, at the old Sheepshead Bay race track by Glenn H. Curtiss, and his flock of birdmen, composed of J. C. ("Bud") Mars, Chas. F. Willard, Eugene B. Ely, J. A. D. McCurdy and Augustus Post.

Several experiments that proved the aeroplane's value in a new sphere were successfully accomplished during the six days the birdmen were flying at the field.

The greatest of these was the wireless telegraph message sent from an aeroplane in flight by J. A. D. McCurdy to H. M. Horton, the designer and operator of a practical wireless outfit especially adapted for sending messages from an aeroplane in flight to a ground station.

Next in importance, from a scientific standpoint, was the test for marksmanship with a regulation U. S. Army Springfield rifle, by Lieut Jacob Earl Fickle, 29th infantry, who fired and hit a target placed on the ground while aloft a hundred feet with Glenn H. Curtiss.

The meet opened on Friday, August 19, and was originally intended to last but Saturday, August 20, and Sunday, August 21. Due to the success of the first three days the meet was extended and lasted three additional days of Friday, August 26th and 27th, closing on Sunday, August 28th.

The opening day was featured by the number of passengers carried by Curtiss and Mars. A representative of every New York daily newspaper was given a ride either by Curtiss in his Hudson Flyer or by Mars.

It was on one of three trips when he had Frank D. Caruthers, a well-known New York newspaper man, as passenger, that aviator and passenger all but came to a disastrous finish. Mr. Caruthers has the distinction of being the heaviest man ever carried as a passenger in a Curtiss aeroplane, his weight being over 195 pounds. It was this fact, however, that nearly resulted in an accident.

As in all his passenger flights Mars started at the upper end of the field and after a short run flew gracefully to the lower end. Instead of stopping there with Mr. Caruthers, Mars determined to make a turn and land his passenger at the starting point.

Half way around an extra stiff puff of wind caught the heavily-weighted aeroplane and in an instant the machine was thrown almost on its side. For fully a minute there followed a pretty bit of air jockeying. It required all of the skill of Mars to regain control of his pitching, tossing, tumbling machine. Experienced aviators on the ground held their breath at the sight and when Mars finally succeeded in weathering the storm and brought his machine safely to the ground he was greeted with a round of applause.

The flight, which was Mr. Caruthers' first trip in an aeroplane, had not impressed the passenger as it did Mars. Caruthers, when he finally climbed out of his seat to the ground, confessed that he had failed to realize the danger he was in while Mars was having his struggle in the air. The real danger to Mr. Caruthers appeared to be at the moment of landing when the aeroplane bounded over the ground.

In addition Mars took his wife, Mrs. Ely, wife of Aviator Ely; Joseph Pulitzer, Jr., of the New York *World*, and Capt. H. Kerrick of the U. S. Army, and others, for a short joy ride through space. Willard also took up passengers.

On Friday, the 19th, four machines were in the air over the same field, and all flying in the same direction.

On August 20, Lieut. Fickle, in service uniform with a full round of ball ammunition, first made a trial flight with Mr. Curtiss to determine if the vibration of the aeroplane would destroy his aim with a rifle. Finding that it would not, he placed a target in the center of the field of about three by five feet in size.

Then as a passenger with Mr. Curtiss he soared about 100 feet and fired downward while directly over his target and struck near the edge of the mark.

Notable was the sending of a wireless telegram by McCurdy on August 27th, from his aeroplane while high over Sheepshead Bay, to H. M. Horton on top of the grandstand at the track. The message was received by Horton on the top of the grandstand and handed to the group of newspaper reporters.

In order to develop the aeroplane wireless Mr. McCurdy and Mr. Horton since the meet have been

J. C. Mars and F. D. Caruthers

at the Curtiss factory, at Hammondsport, N. Y., where they have been making daily trials with the wireless apparatus, which has resulted in unusual results, messages having been sent as far as five miles to the stationary set from the aeroplane in flight.

When the final tests had been made and Mr. McCurdy was ready to make a flight and try out the instruments he was given what was destined to be the first wireless message ever sent from an aeroplane. It had been written by Mr. Caruthers at the request of Mr. Curtiss a week before. Mr. Caruthers has carefully preserved the original of the message which he prizes as one of his most valuable possessions.

The flights on August 26th were featured by the narrow escape and sensational flight made by Augustus Post, the amateur aviator, in a Curtiss biplane when he hurdled two fences and made two complete short circles at the end of the field when he avoided a fence after a beautiful flight across the race track.

Post had never been up very high before, nor had ever made a complete turn. He is the latest Curtiss pupil.

Eugene Ely, Mars and McCurdy broke honors even on Saturday, the 27th, Ely by flying the longest and the highest of any aviator during the entire meet and winning the trophy given by the Manhattan Beach Hotel for being the only aviator to fly over the bay to the hotel and alight on the beach, go in for his dinner and return to the field late in the evening.

Mars on this day hurdled all of the steeplechase hedges in succession in his aeroplane and also qualified for his aviator's license.

On the early morning of the 27th he dropped into the Lower New York bay from a height of 500 feet, in his eight-cylinder machine, and was rescued by the wrecker Hustler and taken into Seagate, L. I. The accident was due to a short circuit of the magnate, when the oil push rod came in contact with the cut-out.

Mars started from Sheepshead Park, flew out across the marshes towards Rockaway, then turned and flew over the ocean, passed in front of the Manhattan Beach Hotel, down past the lower end of Coney Island, at Sea Gate, then turned up the bay and dropped in the water between Swinburne Island and the Atlantic Yacht Club. The distance was about 8 or 9 miles.

The same afternoon at the Sheepshead Bay meet he took Mr. Post's machine and made three flights of five kilometers each, which qualified him to become a licensed aviator.

The closing day of the meet was cold and dreary but the four thousand who braved the elements in hope of seeing some flying were amply repaid.

Long cross-country flights by Ely and Mars were the features, although Augustus Post furnished further thrills about sundown, when in a closing flight he could not see a fence at one end of the field and landed astride it with slight damage to the plane.

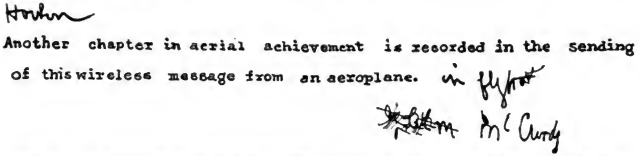
During the meet the aviators flew every day as scheduled regardless of wind conditions, and Mars who was at the track a week in advance of the opening of the meet flew every day for fourteen consecutive days regardless of wind or weather conditions.

Wireless Messages Sent from Aeroplane.

The wireless experiments at Sheepshead Bay were conducted by H. M. Horton, former wireless expert and chief engineer for the De Forest Company. A receiving apparatus was placed at the top of the grandstand at the track and a sending apparatus was secured in the machine and placed just behind the seat. It weighed about 25 pounds. The sending of the message was done by J. A. D. McCurdy while in flight in his four-cylinder Curtiss machine. Mr. McCurdy was a wireless expert himself and will be remembered as one of the members of the Aerial Experiment Association.

BY J. A. D. M'CURDY.

"The telegraphic key was fastened to my steering wheel and was easily operated. For a ground wire from the machine, we used a wire about 50 ft. long, which, after I got well into the air, was thrown overboard and allowed to dangle behind the machine, with the one end fastened to the apparatus. The antena consisted of the guy wiring of the machine so that the whole system was very simple. I made certain definite signals (certain letters) which were easily picked up by Mr. Horton from his position on the grandstand. I flew away for a distance of about two miles and circled at an elevation of about 700 ft. and within this distance the instrument worked extremely well. So far as I know, this is the first time that such an experiment has been performed and now that it has been already done, it will probably be tried extensively by Governments abroad. Mr. Horton came up to Hammondsport from New York and he and I have been trying the wireless from the aeroplane here ever since, and have made very satisfactory tests."



Horton

Another chapter in aerial achievement is recorded in the sending of this wireless message from an aeroplane. in flight

McCurdy

WIRELESS ON AEROPLANE*

WITH A NOTE BY

Capt. Geo. A. Wieczorek, U. S. A.

THE question of whether or not wireless receiving set could be utilized to advantage on aeroplanes has been frequently brought up. So far as known, no attempt to use wireless in this manner has yet been made. At the Chicago automobile show a wireless system was installed in the army aeroplane which was used as an exhibit there, but it had never been operated during a flight. Successful results have been obtained operating a model dirigible, steering, stopping, starting, etc., by M. O. Anthony, as has been previously described in AERONAUTICS.

An inquiry was made by this magazine of Captain George A. Wieczorek, of the Coast Artillery Corps at Fort Terry, N. Y. In reply he says:

"Having followed the progress of wireless pretty closely for the past eight years, it appears to me that it would be rather difficult to get any practical result on account of the proximity of the spark in the cylinders of the engine. You see, the constant discharge taking place would set up a rattle in the receiver which would be practically continuous on account of the rapidity with which the explosions take place.

MAY GUIDE MACHINE BY WIRELESS.

"I believe, however, that it might be possible to arrange an apparatus on an aeroplane and to thus guide its movements from the ground some distance away. In Cuba several years ago I had an apparatus set up only a few feet from an engine which used an electric spark to ignite the gas in the cylinder and after a little practice I had no difficulty in reading signals from Key West, 96 miles off, while the engine was running.

"An aerial for receiving could be easily and cheaply rigged up on an aeroplane and the lead from it could be run through the receiver and grounded on the runners or steel spokes of the wheels."

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* Set in type for the September number but crowded out.

Exhibition Flying About the States.

Warehouse Point, Conn., Aug. 17.—Charles F. Willard (Curtiss) made several flights here this day.

Bradford, Pa., on August 23, saw good flying by Willard. The grounds were exceedingly dangerous and the last flight ended in a damaged machine.

Greenfield, Mass., Aug. 27-29.—Willard filled the Greenfield date, with his large Curtiss machine making four fine flights, flying each day. He flew over the trees and the river and nearby settlements, and carried a passenger on two separate flights.

Hartford, Conn., Sept. 5-9.—The flying at Hartford was of the usual Wright efficiency and consistency, and the meeting was entirely satisfactory. Frank Coffyn filled the engagement with long and interesting flights.

Lincoln, Neb., Sept. 5-10.—Arch. Hoxsey (Wright) endeavored to fill a most difficult contract for flights between the hours of 10 and 12 in the morning, as well as two hours in the afternoon. He found a small infield of a half-mile race track surrounded entirely by barns, grandstands and trees, as a place for him to fly. In an endeavor, on the second day, to satisfy a large crowd, he went up successfully, but in landing was carried over against a barn and descended somewhat precipitately. He was not injured, but the main planes of the machine were badly damaged.

Minneapolis, Minn., Sept. 5-10.—Conditions very similar to those at Lincoln were found here. However, Hoxsey came on from Lincoln and flew, to the great satisfaction of all concerned, completing the engagement which was interrupted by Welsh's poor landing. The weather was bad and there was but three days of flying. J. C. Mars represented the Curtiss type of machine.

Milwaukee, Wis., Sept. 12-16.—Arch. Hoxsey pleased the crowds at Milwaukee, though handicapped by poor grounds. He made a spectacular flight on the opening day, going up 800 ft., cutting figure eights, diving, etc., in a 20-mile wind.

FLYING INJURES EIGHT SPECTATORS.

The flight of Hoxsey's Wright aeroplane at the State fair on Sept. 16 resulted in an accident in which eight persons, five women and three men, were injured. The machine swerved sidelong from its course above the racetrack and plunged into the crowd in front of the grand stand.

The aviator was uninjured and the aeroplane was only slightly damaged.

Parkersburg, W. Va.—P. O. Parmelee, a new Wright aviator, filled an engagement here between the 6th and 10th inclusive, as a part of a celebration of a home-coming week. Upon arrival, Parmelee found that the small racetrack was not very adequate for flying, and he therefore selected an outside field for some work. This fact, however, did not prevent him from doing all of the flying within the small track, with the exception of but one day. On the last day of the exhibition he flew down the Ohio River and out over the town, returning and landing within the small infield. The Parkersburg committee wrote daily, expressing their delight and wonder at the wonderful exhibition Mr. Parmelee was able to afford them.

OTHER EXHIBITION FLIGHTS.

Charles F. Willard filled dates at St. Johnsbury, Vt., Sept. 15, and at Holyoke, Mass., Sept. 17-18. On Sept. 5-6 Eugene B. Ely flew at Kalamazoo, Mich. Augustus Post was at Canton, N. Y., Sept. 13-16; J. A. D. McCurdy at Syracuse, N. Y., Sept. 12th.; E. B. Ely at Rock Island, Ills., Sept. 12-17.

Aviator Eells, of the Kirkham-Eells Aeroplane Company, at Bath, N. Y., made very successful flights before ten thousand people at the Naples, N. Y., fair on September 15 and 16. The machine, which is equipped with a Kirkham 25 to 30 h. p. 4-cylinder motor, gave evidence of extraordinary speed.

Chicago-New York Race.

There are ten aviators officially entered for the Chicago *Post*-New York *Times* Chicago-New York race for the $25,000 prize between the 8th and 15th of October.

Those entered are J. C. Mars, Glenn H. Curtiss and C. F. Willard, flying Curtiss machines, and either McCurdy or Ely in addition; Capt. Thomas S. Baldwin (Baldwin), James Radley of England (Bleriot), Todd Shriver (Shriver-Dietz), Joseph Seymour (Curtiss), Charles K. Hamilton (Curtiss type).

The winner of the $25,000 will be the man who first arrives in New York, provided he is there by the 15th. Starts may be made any time after sunrise on October 8th.

At Chicago, from the 1st to the 7th inclusive, exhibition flights will be conducted by the Chicago *Evening Post*, in which the competitors in the race itself are required to take part. The aviators will be given a percentage of the gate receipts. The first two days are open to anyone, but the remaining ones will be devoted to the flights of only those who are actually starting in the race. Sixty per cent. of the proceeds from these exhibitions will be given the aviators taking part in the race itself, as follows: The aviator who reaches New York first or the nearest point to New York in the time set for the race, will receive of this 60 per cent. a share amounting to 40 per cent.; the second best man gets 20 per cent.; the third, 15 per cent., and the remaining 25 per cent. is divided pro rata among other contestants, with the provision, however, that no one of these "also rans" shall get more than the 15 per cent. allowed the third man in the race.

International Aviation Tournament.

Arrangements for the international aviation tournament, October 22-30, have at last assumed definite form, and energetic effort is being made to make the big meeting at Belmont Park the most successful event of the kind ever given in America.

The subscribers committee has raised about $125,000 in popular subscriptions, and both the funds and the general business management of the meeting have now been turned over to the Aero Corporation, Ltd., which in turn has named several committees to take charge of the general work of organization. Allan A. Ryan is made chairman of the committee on arrangements and becomes the practical business head of the meeting. J. C. McCoy, as chairman of the committee on aviation, has charge of the programme, procuring of the aviators and all things that pertain to the sporting phase of the tournament.

Cash prizes to the amount of $50,000 are offered and in addition to this a profit-sharing arrangement has been decided upon whereby the aviators will get a large part of the net receipts of the meeting after deducting the necessary expenses. Under this arrangement the aviators will receive 70 per cent. of the first $100,000 net profits, and 40 per cent. of all sums over that. The managers are assuming that with good weather and normal attendance there will be something like $200,000 to be divided among the aviators under this plan.

General business headquarters of the tournament have been opened in the Fifth Avenue Building at Fifth Avenue and Twenty-third Street, and a force of experts and clerks are at work there putting things into shape.

Belmont Park is undergoing such transformation as is necessary to make it suitable for the airmen and the big crowds. All obstructions have been removed from the infield where a two-and-a-half kilometre course is being laid out for the general events. A five kilometre course for the Gordon Bennett trophy race will extend outside of the park to the east, but the start and finish of all events will take place directly in front of the grandstand.

The Gordon Bennett international race, which will doubtless be the banner day of the meeting, will occur on October 29, and the elimination trials for the selection of the American team will probably take place October 26. Coming as it does after the close of all other meetings here and abroad, it is expected that the list of entries for the $50,000 prizes will be large. Nearly two months before the opening of the meeting, it is said by the management, that applications had been received from a larger number of foreign and American aviators than have ever appeared at any American meeting, and by October 15, it is expected that the aviation committee will be able to close its books with as interesting a list of airmen as have ever appeared at any one meeting.

For the Gordon Bennett contest France has already named Alfred Le Blanc, Hubert Latham and Rene Labouchere. England has officially named as the British team Claude Grahame-White, James Radley and Alec Ogilvie. In addition to these there are several other foreign aviators who have made application to be entered for participation in the general events. Henry Weymann and J. Armstrong Drexel, two well-known American aviators, have sent over from Europe their entries for the meeting, and it is quite likely that they will enter in the elimination trials for the Gordon Bennett. Glenn H. Curtiss, who brought the trophy to America, has been offered the privilege of heading the American team without taking part in the eliminatory trials, and if he accepts this offer it will intensify the rivalry among the other American aviators for the other two places.

Large sums of money are to be spent in advertising the meeting in all parts of the country, and the managers are preparing for the greatest crowds ever assembled for any sporting event in the vicinity of New York City.

Curtiss has still another new machine in the background in anticipation of the proper turning of the Aero Club tide for the International. Curtiss objects to entering into certain present arrangements as regards the race. If the Aero Club makes arrangements which, in his opinion will permit him with dignity to be one of the defenders of the cup, it is prophesied that Curtiss will be on the job with a machine expected to beat anything yet. In any case, it is probable J. C. Mars will compete in the expected elimination trials for the selection of the American team. There are available for this team those holding pilot certificates of the A. C. A., the self-constituted judge of one's ability to fly.

The following is a list of pilots to whom the Aero Club of America has granted aviation licenses up to September 1.

Glenn H. Curtiss.
Frank P. Lahm.
Louis Paulham.
Orville Wright.
Wilbur Wright.
Clifford B. Harmon.
Capt. Thomas S. Baldwin.
J. A. Drexel.

J. C. Mars made a successful attempt for an aviator's license at Sheepshead Bay, which license he will no doubt be granted at the next meeting of the governors. Tod Shriver has also complied with the rules.

Capt. Thomas S. Baldwin has begun the construction of an aeroplane in the anticipation of being one of those to defend the Gordon Bennett cup.

New York, Sept. 18.—The programme of events for the international meet at Belmont Park were announced today.

The summary of the programme for the meet follows:

Gordon Bennett International	$5,000
Gordon Bennett Elimination	1,500
Totalization of duration	6,000
Grand speed	4,500
Grand altitude	3,000
Fastest flight—ten kilometers	3,000
Passenger carrying	3,000
Cross-country	1,700
Cross-country passenger carrying	2,000
Kilometer straightaway	2,550
Total	$33,850
DAILY.	
Daily totalization of duration—8 days, $850 each	$6,800
HOURLY.	
Hourly altitude, 13 hours, $400 each	$5,200
Hourly distance—7 hours, $400 each	2,800
Hourly speed—5 hours, $400 each	2,000
Total	$10,000
General prizes	$33,850
Mechanics' general prizes	1,000
Daily prizes	10,000
Hourly prizes	10,000
Michelin prize	4,000
Scientific American trophy	.....
Total	$55,650

To better the present standing in the 1910 Michelin contest one will have to beat 244 miles and a duration of 5 hours and 3 minutes.

Aero Calendar of the United States.

Sept. 19-24—Detroit, Mich., Wright aviators.

Sept. 20-22—Pueblo, Colo., Hillery Beachey in Gill biplane.

Sept. 20-24—Allentown, Pa., to Philadelphia and return, J. A. D. McCurdy (Curtiss).

Sept. 21.—Olean, N. Y., flights by Willard (Curtiss).

Sept. 21-22—Roanoke, Va., E. B. Ely (Curtiss).

Sept. 22-28—Knoxville, Tenn., Wright aviators.

Sept. 23-25—Philadelphia, C. F. Willard (Curtiss).

Sept. 26-30—Trenton, N. J., Wright aviators.

Sept. 27-30—Rochester, N. H., Wright aviators.

Sept. 27-30—Poughkeepsie, N. Y., E. B. Ely (Curtiss).

Sept. 28—Montevista, Cal., Hillery Beachey in Gill biplane.

Sept. 28—Boston, Mass., Chas. F. Willard (Curtiss).

Sept. 26-Oct. 1—Helena, Mont., J. C. Mars.

Oct. 1-7—Chicago, Ill., exhibitions by entrants in Chicago-New York race, and by others.

Oct. 1-8—Springfield, Ill., Wright aviators.

Oct. 1-7—Sedalia, Mo., Wright aviators.

Oct. 5—Danbury, Conn., E. B. Ely (Curtiss).

Oct. 3-7—Washington, Pa., Wright aviators.

Oct. 3-8—Spokane, Wash., J. A. D. McCurdy (Curtiss).

Oct. 3-8—Richmond, Va., Wright aviators.

Oct. 4-7—Cumberland, Md., Hillery Beachey in Gill biplane.

Oct. 6-12—Birmingham, Ala., Wright aviators.

Oct. 8-15—Chicago-New York race.

Oct. 8-18—St. Louis, Mo., aviation meet in conjunction with the international balloon race; Wright aviators and others.

Oct. 12—Youngstown, O., E. B. Ely (Curtiss).

Oct. 17—St. Louis, Mo., Gordon Bennett balloon race.

Oct. 22-30—Belmont Park, L. I., international aviation meet, including Gordon Bennett aviation race, latter on Oct. 29.

Oct. 28-Nov. 1—Macon, Ga., Wright aviators.

Nov. 2-12—Philadelphia, Pa., aero show of Pennsylvania A. C.

Nov. 17-24—St. Louis, Mo., Coliseum aero show.

Dec. 1-8—Aero Show of A. C. of Illinois.

Thirteen Balloons in Indianapolis Race

Indianapolis, Ind., Sept. 17.—Drifting northeast from this city are thirteen balloons. Nine of them are sailing to win a chance to represent America in the International Balloon Race at St. Louis, on October 17, and four were entered in the free for all event for a diamond studded cup.

Pilot John Berry of St. Louis, who won the American championship race last year in the balloon University City, entered in the free-for-all.

The National championship entrants are H. E. Honeywell, St. Louis, "St. Louis"; William T. Assmann, St. Louis, "Miss Sophia"; Louis von Phul, St. Louis, "Million Population Club"; J. H. Wade, Jr., Cleveland, "Buckeye"; Clifford B. Harmon, New York, "New York"; Alan R. Hawley, New York, "America"; Arthur T. Atherholt, Phila- N. Y., "Hoosier," and C. G. Fisher, Indianapolis, delphia, "Pennsylvania"; Charles Walsh, Kingston, "Indiana II."

The free-for-all race entrants are Capt. John Berry, St. Louis, "University City"; H. W. Jacobs, Topeka, Kan., "Topeka"; Albert Holse, Cincinnati, "Drifter," and Dr. L. F. Custer, Dayton, "Luzerne."

International Balloon Race.

For the Gordon Bennett balloon race at St. Louis on Oct. 17, the following foreign entrants have been named:

Germany.—Hauptmann von Abercron, Lieut. Vogt, Ingenieur Hans Gericke.

Switzerland.—Colonel Schaeck and Captain Messner.

France.—A. Le Blanc and Jacques Faure.

Le Blanc was a French representative at St. Louis is 1907, and Von Abercron represented Germany. Col. Schaeck won the 1908 race for Switzerland, and established a world's duration record of 72 hours.

News In General

Lamson Issues Notice of Infringement.

Becker & Blakeslee, attorneys for Charles H. Lamson, of Pasadena, Cal., have sent out a letter to various makers and dealers in aeroplanes, demanding that the recipients cease making, selling or using flying machines. The principal claims of the patent, with drawings, were printed in the July, 1910, issue of AERONAUTICS. The letter follows:—

> "This is formal notice to you of the issuance of Letters Patent of the United States, number 666,427, dated January 22, 1901, to Charles H. Lamson, which said letters patent you are infringing, in making, using or selling flying machines or mechanism or apparatus for navigating the air. We are directed by Mr. Lamson, the patentee, to demand of you and your agents, attorneys and servants, that you and each of them cease and terminate any such act or acts of infringement of said letters patent, or acts of infringement of said letters patent of any nature whatsoever, and that you and each of them respect said letters patent and the monopoly and rights thereby granted and awarded to said patentee. Suit for infringement of said letters patent is now pending against the Wright Company, of Dayton, Ohio, and further suits for infringement of said letters patent will in due course of time be instituted against other infringers; and the court will be asked to enjoin any such act or acts of infringement, and to award to said patentee the damages and profits involved in and flowing from any such act or acts of infringement, and to grant such further relief as may in each instance be proper and warranted by the facts.
>
> "Pending adjudication upon said letters patent, and in order that no person, firm or corporation engaged in truly promoting the sport and art of aerial navigation may be barred or interfered with in such efforts, we are prepared to issue proper licenses covering the manufacture, use, sale and attendant activities involving the use of the invention covered by said letters patent. The initial payments on account of royalties or license fees in connection with the issuance of such licenses, will be nominal in each instance; and the payment of the balances on account of such license fees and royalties will be made conditional upon such adjudication of said letters patent as shall amount to a determination of the validity thereof."
>
> "Very respectfully,
>
> "BECKER & BLAKESLEE.

"Attorneys and Counsel for Chas. H. Lamson."

National Council of A. C. A. Issues By-Laws.

The National Council of the Aero Club of America has issued its first booklet. Full details of the organization of the Council have already been given in AERONAUTICS.

The clubs now belonging to the National Council pay $25 a year dues and $1 for each member. New clubs joining the Council must pay an initiation fee of $50 and $1 for each member. Though, if admitted between January 1st and July 1st, the rate is but 50 cents for each member.

It seems more than ever apparent that the whip hand is with the Aero Club of America, as one of its officers announced at the time of the formation of the new body. The by-laws provide that the chairman of the Executive Committee be named by the Aero Club of America, and in addition, the Club has the privilege of naming another voting representative; the other thirteen composing the Executive Committee being made up of the other members of the Council. The Executive Committee has complete control of affairs between semi-annual meetings of the Council, and the chairman exercises executive powers between meetings of the Executive Committee.

Following out the up-to-the-present-existing policy of the Aero Club of America, to have the whole say so far as possible in matters aeronautical, the plan of the National Council is to have but one club in each State a member of the Council; that club in turn to have affiliated with it the local clubs of its State. The exception is made, however, of the clubs represented at the organization meeting. As many clubs in one State or Territory as were represented, are now members of the Council.

The Contest Committee has made out a very complete set of conditions to be observed by those promoting races, though there is no case on record where these have been complied with as yet. One particular rule of interest provides for the preventing of any performance by a contestant refusing to conform to the rules and regulations of the National Council, and the inflicting of penalties and disqualifications.

The Contract and License Committee is to keep in touch with the qualifications of all professional and amateur aeronauts and aviators and to seek to induce them to apply for pilot licenses.

The Academic Committee is supposed to be conversant with the work done by the various governments, schools and laboratories, and to co-operate with educational authorities "with power to receive donations and confer medals." The Aero Club of America has always been gratifyingly active in the awarding of medals, certificates of merit, the holding of banquets and participating in other strenuous labors. Perhaps the most important committee is the one on publicity, among whose duties is the furnishing of news items to the press.

Every affiliated club is entitled to one voting member in the Council, though another representative is provided for and allowed the privilege of attendance at all meetings and the right to debate but no vote.

Promoters of meets or exhibitions are asked to pay a fee of $100 to cover the first two days of the meet and $50 for each additional day.

Wheels on the Army Aeroplane.

Through the kindness of General James Allen, Chief Signal Officer of the Army, we are able to furnish some interesting details of the wheel arrangement on the Army aeroplane.

The original idea in equipping the machine with wheels was to employ a system whereby the wheels would be used for starting and both skids and wheels would be used in landing, thus minimizing the amount of reconstruction of the under structure of the machine, and reducing the wear and tear upon both wheels and skids in landings. This idea has been carried out with but slight modification and the results have been entirely satisfactory. Five wheels 14 in. in diameter are used. Four wheels in pairs under the machine (one pair for each skid), and one wheel in front to support the weight of the machine in front of the main planes. All wheels have the same dimensions, are interchangeable and are equipped with steel rims and 2¼ in. single tube tires. Each pair of wheels under the machine are operated on a steel shaft 12 in. in length, connecting its two wheels. This shaft rests on top of the skid, and is held down in place by means of a vertical wooden block and two vertical tension springs. Across the top of the wooden block is a flat steel rod with ends turned up into which the ends of the springs are fastened. The other ends of the springs are fastened to the skid by means of metal bands. The two vertical springs and wooden block are enclosed within a light galvanized iron casing to prevent the springs and block from distortion due to lateral strains. In addition to the heavy vertical springs, four horizontal springs are employed to minimize the horizontal torque on the wheels resulting while running on the ground. These springs are attached to the shaft so that one pair exerts tension toward the rear, while the other pair opposes this tension. The single wheel in front is provided with two pieces of flat spring steel which constitute a fork for the wheel. The pieces of spring steel are fastened to a cross bar and guyed in four directions with steel wire to prevent movement in any direction. These pieces of spring steel are designed to support a weight of about 80 pounds under a 7 inch deflection. This weight being sufficient to force the skids to the ground. The operation of the machine as regards the use of wheels is as follows:

With the engine running and the machine held stationary, the front end of the skids are forced to the ground, due to the high thrust of the propellers. Upon releasing the machine it moves forward slowly at first. As soon as the front plane is elevated, the air pressure under the elevating plane raises the front skids and allows the front wheel to do its work. As soon as the momentum of the machine increases the weight of the machine upon the vertical springs decreases until finally all the wheels leave the ground. Upon landing, the machine is guided so as to land upon the front wheel. Under the force of impact the front wheel is deflected upward, allowing the skids to strike the ground. The pairs of wheels under the machine as they strike the ground are forced upward, allowing the skids to strike the ground. The reaction of all the springs after the initial impact raises the machine and allows it to run along the ground until it comes to a full stop.

One of the most unpleasant features in landing on wheels is the difficulty experienced in stopping the machine after landing. This is extremely vital, particularly when landing in a small enclosure. This difficulty has been practically eliminated by means of the flexible front wheel and the use of the front elevating control. Upon striking the ground the front control is depressed, the air pressure on top of it being sufficient to hold the skids on the ground, thus bringing the machine to a full stop in nearly the same space as was formerly the case when using the skids alone.

During the month of August Lieut. Foulois made several short flights, aggregating in time 75 minutes and 43 seconds. These flights were merely experimental, and for purposes of testing out the new system of control and the new system of wheels.

The Latest Gill Biplane.

The Howard W. Gill Curtiss type biplane which made its first appearance, with successful flights, driven by a stock 26 h. p. automobile engine, at the Los Angeles meet, has been taken over by the St. Louis Aeronautic Supply Co.

The later type Gill machine, on Farman lines, and without any front rudder, has started on an exhibition career with Hillery Beachey as aviator.

The vertical control of the Gill biplane differs from other biplanes by its location in the rear of the machine, where it also acts as a steadying plane as well as an elevator.

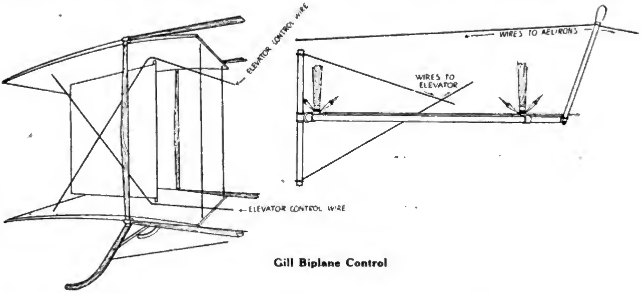
As will be seen from the drawing it consists of two superposed planes which are pivoted slightly in front of their center of pressure about one-third of the distance from the front edge, both of which planes are connected front and rear by upright wires so that they work in unison.

To give added security the wires controlling the elevator are in duplicate and besides a safety wire is also placed in the rear plant. As these planes are hinged forward of their center of pressure should anything happen it would have the same effect as the operator taking his hand off the controlling lever in which event the rear planes would point down and start the ship climbing upward. In this case the safety wire comes into effect and only allows the machine to climb at a safe upward angle, so that by slowing down the motor the machine can be brought naturally and safely to the ground.

A landing of this nature was made necessary in the experimental stages at Los Angeles, Cal., through a broken wire, and was made without any breakage to the machine, and in such a natural way that those who witnessed it were unaware until told.

A hand lever placed on the right side operates the vertical control. A forward movement increasing the angle of incidence in the rear tail which raises the tail and steers the biplane downward. Pulling back on the lever reverses the movement and steers the machine upward. This same lever also controls the ailerons. At first it was hinged in a universal joint to secure both the forward and sideway motions. This was afterward changed to the T-joint shown as it was found to give a better control than by pivoting the lever on a universal joint. In the improved joint both the forward and sideway movements are more positive and distinct. With this new type lever a movement of the ailerons can be made without any tendency to work the elevator also, or vice versa.

At first the rear elevator was found to have a decided lag, a movement to raise the ship would apparently have no effect, which made the operator feel that the lever had not been moved sufficiently to raise the machine and generally resulted in and increased movement of the lever then as the flyer



Gill Biplane Control

would start rising due to the first movement the lever would be pushed forward to carry the machine level when on account of the ship still rising it would seem as if it was beyond control. By increasing the surface of the rear tail and reducing the weight this lag, nearly always apparent in an aeroplane controlled vertically from the rear, was to all practical purposes eliminated.

As it is necessary for good stability to have a machine with a rear plane it is a big advantage to use this tail as an elevator also. To leave off the front elevator not only makes a lighter machine by some 40 to 80 pounds, but makes the rest of the ship stronger by its not having to stand this added weight, on account of their being no obstruction in front. In case of an accident the operator is less liable to be caught under the machine and crushed. It is bound to make a faster and therefore more stable flyer by the elimination of the head resistance of the front planes and their supports.

Wellman Airship.

Rapid progress is being made toward the preparation of the Wellman airship "America" for its promised attempt to cross the Atlantic. Since the last start for the pole on August 15, 1910, the airship has been enlarged and improved and an entirely new steel car placed under it. It is anticipated that the voyage across the Atlantic will require from six to ten days, depending on the force of the prevailing winds.

Trials will be made at Atlantic City in which the equilibrium will not be used, sand and water ballast being employed instead. These trips are to test the machinery and get everything in running order.

The "America" is the second largest airship ever built, and next to the Zeppelin in size, but has a larger carrying capacity than the Zeppelin. The ship has been built and perfected in Paris under the direction of Walter Wellman, and the personal supervision of Chief Engineer Vaniman, who designed most of the ship and constructed many parts and accessories.

FACTS ABOUT THE AIRSHIP "AMERICA."

Length of Balloon	228 feet.
Greatest Diameter	52 feet
Volume	345,000 cu. ft.

1 cubic foot of air weighs 1 1/5 oz.
345,000 cubic feet of air weighs 25,800 pounds.

The balloon is inflated with hydrogen gas generated by using eighty tons of sulphuric acid and sixty tons of iron turnings. The gas is washed and dried to make it as light and pure as possible. This gas weighs one-tenth of an ounce per cubic foot and the 345,000 cubic feet required to fill the balloon weighs 2,150 pounds, the gas being twelve times lighter than air. The lifting force of the balloon therefore is the difference between the weight of the air displaced and the weight of the hydrogen with which the balloon is filled. The total lifting force of the "America" is 23,650 pounds.

The balloon itself, composed of three thicknesses of cotton and silk gummed together with rubber to make it gas tight, weighs 4,850 pounds. Underneath the balloon is suspended by steel cables the car, which weighs 4,400 pounds. This car is built of the highest grade steel tubing and in places withstands stresses of twelve tons. The car is 156 ft. in length, and the steel tank at its base is 75 ft. long with a capacity of 1,250 gals. of gasoline. The engines, three in number, (two of 80 h. p. and a service motor of 10 h. p.) are placed in the steel car. Each of the large motors drives a pair of twin screws, and each propulsion system is independent of the other. The motors and other machinery weigh about 1,500 pounds. Sleeping quarters are provided the crew of six men in the triangular parts of the car. An electric light system, a wireless telegraph equipment and a telephone connecting the different parts of the ship are being installed.

A specially built life-boat, constructed in England, will be swung underneath the car, fully equipped with provisions, water and instruments to be used by the crew in an emergency. This life-boat weighs less than 1,000 pounds.

Hanging from the airship by a strong steel cable is what is known as the "equilebrator," a part of which will float upon the surface of the sea, the other being suspended vertically in the air. The purpose of this is to act as an automatic regulator of the upward and downward movements of the airship. When the ship rises, it must lift some of the equilebrator from the surface of the sea in order to go up, and this added weight checks the rising movement. Conversely, when change of temperature or accumulation of moisture causes the airship to descend, a greater part of the equilebrator is let down upon the sea, thus reducing the weight carried by the balloon and checking the descent. The equilebrator is composed of thirty steel tanks containing gasoline and strung together by a strong steel cable. The gasoline thus carried is a reserve supply for the engines.

The total supply of gasoline carried will be 10,000 pounds, or about 1,800 gallons, which is considered sufficient to drive the airship from Atlantic City to Europe. The distance is about 3,000 miles. With one engine running, the airship will have a speed of twenty miles per hour, and the quantity of gasoline carried would run one engine 200 hours. With both engines running, the ship's speed in still air will be about 26 miles per hour.

Patents.

Fred Lincoln Gould, Reno, Nev., assignor of one-quarter to John H. Dodd and one-quarter to Ambrose M. Smith, Reno, Nev., 986,452, July 26, 1910, filed Feb. 5, 1909. FLYING MACHINE of the helicopter type comprising two vertical masts, one rotatable with the other, and each carrying a parachute having apertures therein, with blades set in the apertures. Means are provided to rock the blades so as to present different angles of incidence or close entirely the apertures in the parachute.

Clifford Broderick Cronan, Shelburne Falls, Mass., 965,622, July 26, 1910, filed Feb. 17, 1909. FLYING MACHINE consisting of a main frame and a skeleton frame arched in its upper portion and covered with thin pliable covering. The skeleton frame is so constructed that it may be rocked longitudinally and laterally. There are planes and propellers on vertical axes within the structure for sustention.

John G. Stites, Willowbrook, and Frank Stites, Los Angeles, Cal., 965,491, July 26, 1910, filed March 24, 1910. FLYING MACHINE SUPPORTING PLANE. A double canvas surface sewed in such manner as to provide longitudinal and transverse pockets. "Rafters" are inserted into the side longitudinal pockets while a "ridge pole" is inserted in the intermediate longitudinal pocket and "ribs" are inserted into the transverse pockets.

John Law Garsed, Elland, England, 965,289, July 26, 1910, filed Nov. 11, 1909. Apparatus for operating planes or wings and rudders of aerial machines. Two shafts are arranged end to end and are provided at their adjacent ends with bevel gears into which a miter gear meshes, the latter provided with a hand wheel. In addition to the rotation provided by the above there is also a handle attached to a rocking frame suspended from the shafts and foot pieces applied for giving slight rotary or oscillating motions to shafts.

Leonidas Hamlin Barringer, Charleston, W. Va., 965,682, July 26, 1910, filed May 29, 1908. AIRSHIP, the characteristic feature of which lies in an open ended casing or cylinder extending centrally and longitudinally through the cigar-shaped gas bag. The cylinder is held in place by partition secured to it and to the envelope and these partitions serve in addition to form separate gas containing compartments. The usual car is suspended from the envelope and transmission means are provided to rotate propellers in the central casing or cylinder.

Show in Washington.

Under the auspices of the Aero-Scientific Club of Washington, D. C., an aero exhibit will be held at the Union Station, in that city, week of October 3d.

An invitation is extended to all persons having new ideas, inventions, flying machines or any aero appliances to exhibit. There will be no expense to exhibitors, beyond transportation.

Will also hold amateur aero meet at College Park, near Washington, opening October 17th, and continuing ten days. All exhibitors having machines here on exhibition can have full week for try out and practice work at College Park aviation field and grounds, before the meet, thus becoming familiar with field and grounds and be able to make credible showing at the meet.

All persons who desire to enter exhibit or wish particulars in regard to meet, communicate with F. L. Rice, secretary, 614 19th street, N. W., Washington, D. C.

Philadelphia Aero Show Changes Date.

The aero show which has been announced by the Aero Club of Pennsylvania, to be held in the First Regiment Armory, Philadelphia, has been postponed a few days and will now be held November 2 to 12.

This postponement has been found necessary because a number of the aeroplanes which will be on exhibition and which will be the principal attractions for the public will be competitors in the Belmont Park meet, and as these races have been put off until October 22 to 29, the arrangements have been made to open the show on the Wednesday following, thus giving plenty of time to ship the machines from Long Island to Philadelphia and to set them up in the Armory.

In response to a number of requests from exhibitors who are also going to show their goods in St. Louis, the A. C. of P. is arranging to have a special car engaged to be packed with goods from the Philadelphia show immediately on the close, November 12, and to send this car by express to St. Louis, so that the exhibit can be set up there in time for the opening.

The Philadelphia show is attracting unusual interest among dealers in aeronautic and aviation supplies because of the activity that has been recently shown by the Aero Club of Pennsylvania. This organization has now gone into ballooning with weekly ascents scheduled. Its new grounds for aeroplane flights at Clementon, N. J., have been pronounced by those who have seen them to be far ahead of most other grounds, both in their natural advantages and in the building which has been done on them.

The hangars on these grounds are three hundred feet long and so constructed that there are six separate compartments, each 50 ft. wide and 40 ft. deep, and each containing a work-bench and two sleeping compartments, to accommodate four persons. The club is also installing a complete machine shop to be run by a 5 h. p. gas engine, and the fact that every one of these hangars has already been leased for the entire winter is an indication of the busy days that are in store for members of this organization.

A large percentage of the space in the Aero Show has already been taken by residents of eastern Pennsylvania, Southern New Jersey and Delaware, of which Philadelphia is the natural center, these residents having turned in remarkable numbers to the manufacture and sale of aeronautic and aviation goods. The recent growth of the Aero Club of Pennsylvania has been one of the most notable features of American aviation news and the club is being run upon a business basis which promises well for its future.

The "Three States Aero Show" has been placed by the club under the management of Henry M. Neely, the secretary, who is also chairman of the committee on contests and exhibitions, and who has had many years' experience in show management and publicity.

St. Louis National Aero Show.

Preparations for the St Louis National Aero Show, to be held November 17 to 24, in the great Coliseum in St. Louis, under the auspices of the Aero Club of St. Louis, are rapidly progressing. The manager now believes there will be on exhibition from 12 to 15 full size aeroplanes and 40 or 50 flying models.

More than 35 concerns have already contracted for space at the show, among these are: AERONAUTICS, Detroit Aeroplane Company, Aeronautic Supply Company, Goodyear Tire & Rubber Company, Aeromotion Company of America, Aerial Navigation Company of America, Leading Brass Company, French-American Balloon Company, Missouri Stair Company, St. Louis Pattern & Model Company, United Storage & Battery Company, Lawson Publishing Company, Phoenix Auto Supply Company, Western Oil Pump & Tank Company, H. K. Harry Steel Company, Erker Bros.

Among the complete aeroplanes to be shown will be a Wright machine which will occupy the place of honor at the main entrance, a Farman biplane, a Santos Dumont "Demoiselle," Gill biplane, Curtiss biplane, Baldwin biplane, and several other machines that have recently tried out, but have not yet made important flights.

A novel exhibit will be that of the Missouri Tent & Awning Company, makers of aeroplane hangars, which will show a model aviation field with a miniature grandstand, hangars and aeroplanes. Among the flying models there will be a novelty in the form of a ornithopter, which actually flies in much the same way as a humming bird.

The spaces devoted to the exhibits of inventors or those who will show plans, or specifications, or models of aircraft, in which they desire to interest capital, are rapidly filling up.

G. L. Holton, manager of the show, with offices in the Coliseum building, reports that there is very little space left in the Coliseum and urges manufacturers who plan to exhibit there to advise him at once.

BALLOON TRIP OVER ROME

(Continued from page 111)

I was seven hours on my voyage from Rome to Benevento, going over the Apennines, where I was well received by the Italians, who praised me very much, because I had courage to defy the Pope, who then had a bitter feeling for some cause against our nation. Several persons hailed me on my way, and were highly delighted to see a great balloon pass over their heads. I made the voyage of two hundred miles in the year 1869 from Rome. My American and English friends presented me with a splendid flag in Rome, which they desired to see me wave over the city.

At that time only the Pope's flag was allowed to float over the Eternal City, by orders of the Pope (Pius the Ninth) who reigned over the city. His secretary, Antanelli, and Governor Randi, said I must not carry the Stars and Stripes over Rome. On my third ascent I put my flag in the car, and as I began the ascent I took off the Pope's flag and put in its place the Star Spangled Banner and waved it in triumph. A tremendous shout from Americans and British and the admirers of Garibaldi was given as I sailed off towards the beautiful city or villa of Tivoli at the foot of the splendid Apennines.

I had to give away half the money received at the villa of Borghese, an immense garden belonging to Prince Borghese, who married Pauline, the sister of Napoleon the Great. About four thousand dollars was taken at the gates. Garibaldi and Crispi were my friends, and seemed highly delighted with my courage and defiance of the Pope and Roman powers.

At Naples I received my fifteenth degree in Freemasonry at the Garibaldi lodge. In the masonic lodge at Palermo, where M. Crispi was the grand master of the lodge, I heard him and others speak in favor of taking Rome by Garibaldi. The poet Longfellow and the Queen of Naples were among the twenty thousand people who saw my ascent at Rome.

IN THE AERIAL MARKET PLACE

TO OUR FRIENDS—We would appreciate it very much if you would specify in writing advertisers that you saw the ad. in AERONAUTICS. This will help us, and eventually be of equal service to yourselves.

New High Powered Engine.

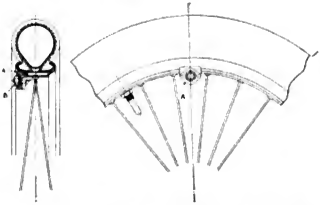
Owing to the demand for high powered engines of 60-75 or even more horsepower, the Detroit Aeronautic Construction Co. is contemplating putting on the market an 8-cylinder engine. Their largest motor at present is a 6-cylinder, 5 by 5, weighing complete about 285 lbs., rated at 60-75 h. p.

Bosch Chicago Office Moved.

The office and headquarters of the Chicago branch of the Bosch Magneto Company has removed from the former address at 1253 Michigan Avenue, to 119-121 East 24th Street. A two-story building midway between Michigan and Indiana Avenues.

Demountable Rims for Aeroplanes.

The Dorian Remountable Rim Co. has brought out a demountable aeroplane rim. The principle of the construction and operation of the aeroplane rim is the same as that of the automobile rim, the chief difference being that the felloe band of the automobile rim is shrunk on the wood felloe of the automobile wheel, while with the aeroplane rim, the wire spokes of the wheel are secured in the joint as per the general practice.



The five wedges of the aeroplane rim are made of aluminum alloy, and the rims on which the tire is fitted is of rolled sheet aluminum; the felloe band is of steel.

The difference in weight between the rim and a regular clincher rim is about 5½ pounds per wheel.

To remove the rim with the deflated tire so that the rim with a properly inflated tire can be fitted in its place, it is necessary to merely remove three of the wedges by turning the nut "B," which is held in the wedge by a plate so that it virtually forms part of the wedge; for this reason, it is impossible to lose a nut. The band to which the spokes of the wheel are secured is made of an alloy steel, and the rim holding the tire is made of steel aluminum alloy rolled to shape.

On Two-Cycle Engines.

At last even conservative Mineola, the hotbed of aviation in the East, has come to accept the two-cycle engine of modernized type as one solution of the power problem for consistent aeronautic work, and none of the novice aviators there feel their chances for achievement are good without the now popular two-cycle engine.

In the Western States they found favor months ago, because Western users of gasoline engines know that all their fastest motor boats for the past two or three years have been driven by light-weight two-cycle engines. And the winning of a great motor boat even demands from the power plant just what successful flight calls for,—an engine very light for its power, very simple in design, and one capable of turning a propeller at a high speed for considerable periods of time.

Automobile work is entirely different; the motor must pull hard in starting or climbing hills, but runs practically free on level ground,—except where extreme high speed is maintained. Practically no "stock" automobile motor will stand maintained high speed; it overheats, connecting rod bearings pound to pieces, or, most frequently, the valves warp and fail. The motors simply are not designed for indefinitely long runs at maximum speed, consequently no really successful flight has been made in America with an automobile engine. Two-cycle motors have been successful in motor boat work simply because they have been designed and perfected with but two ends in view, power for weight and long continued high speed.

Mineola, however, knew little about boats or boat engines. Most of the men who formed the colony were graduates from the automobile school and they were sceptical concerning the alleged merits of the two-cycle engines.

"Nothing to it," they said at first, and then Dr. W. Greene made a couple of get-aways early in the season.

Dr. Greene's flights proved that the engines would fly, so Mineola had to leave the general and come to the particular.

"Two-cycle engines are difficult to start," said the "boys"; but G. E. DeLong brought his Schneider 'plane to Mineola with an Elbridge two-cycle engine, started it in two minutes the first time and on the spark whenever he liked for the rest of the day. The doubting Thomases were beginning to scratch their heads.

"But you can't keep a two-cycle engine cool with an ordinary radiator," they exclaimed, when a 20-h. p. radiator attached to a 50-h. p. engine boiled over after a ten-minutes' run. Two or three days later J. J. Frisbie installed a four-cylinder Elbridge in his 'plane, used two small radiators so placed that they received an uninterrupted current of air, and not only did the two-cycle engine cool properly, but it was the only engine on the aviation field that could be run for twenty minutes at a stretch (standing) without boiling over.

"That's a nice little engine," said Captain Baldwin to Frisbie, when the installation had been made and Frisbie was preparing for his trial flight, "but a man needs more power to fly with than you can get from four small cylinders."

"Great Scott! That's too much power for a novice to monkey with," said Captain Baldwin five minutes later, as Frisbie sailed by at a speed approximating fifty miles an hour.

"Anyway, you can't throttle down a two-cycle engine," was their final wail, quite refuted by different users, who throttled down the engines in their machines so well that the 'planes could be left standing alone with their propellers slowly turning.

That was the last straw, and the crowd bolted for two-cycle engines of the "Featherweight" type. George Russell, who has been using a four-cycle engine all summer installed a two-cycle and went away to fill an engagement. Frisbie, in three weeks, had learned to fly so well that he threatened the laurels of men who have spent more than months learning to fly, and he found easy money reaching out to him. Some half-dozen others followed suit, until now there are more of one make of two-cycle engines being installed at Mineola than all different four-cycle makes combined.

There now are literally dozens of them around New York. Their chief beauties seem to be strength, power and smooth-running. They have been in smash-ups of all kinds, but not a part of any one of the engines has been broken. Several men report leaving the ground inside of 100 feet, which speaks well for their reserve power, and in summing up the operation of the engine the *Evening Sun* of August 30 says it "runs like an electric motor."

At Buffalo on Labor Day an Elbridge "Featherweight" installed in the boat Elbridge V, won the $500 Buffalo Launch Club trophy for the 25-mile championship of the Great Lakes, under conditions so adverse that none of the other boats, mostly equipped with four-cycle engines of 250 to 300 h. p., finished the race.

Even Europe has fallen victim to the seductions of the simple two-cycle engine, there are several new makes on the English market, and the American manufacturers of the Elbridge "Featherweight" engines are said to have declined to entertain a proposition guaranteeing $50,000 per year for European manufacturing rights.

Finest Workmanship Displayed on Burgess-Curtis Biplanes.

The Burgess Company & Curtis has good reason to be gratified by the many compliments the machines received for their construction and unequalled finish. Several of the aviators at the Boston meet have requested this concern to furnish them with spare parts or construct machines for them. The new 8-ft. propeller designed by W. Starling Burgess has attracted particular attention ever since it developed a thrust of more than 460 pounds. While the power to produce such an enormous thrust was primarily due to the excellence of the eight-cylinder Indian motor, it is nevertheless greatly to the credit of the propeller itself that the power should be applied so efficiently.

IMPORTING CLEMENT MOTORS.

The Clement-Bayard motors, which this company is importing direct from the manufacturer, can be supplied at $1,500 each. These motors when tested by Bleriot's engineers developed from 25 to 31 h. p. continuously and weigh less than 110 pounds. The well-known reputation of the Clement-Bayard factory is back of them.

The Burgess-Curtis machines at the Boston meet did not show up so prominently for unavoidable reasons. A 60 h. p. motor for the Burgess biplane owned by Messrs. Shoemaker and Hilliard arrived only at the last moment before the meet, and Mr. Hilliard has required a large amount of testing and adjusting in order to adapt the heavy motor and its 8-ft. propeller to a machine designed for a light 25 h. p. motor using a 6-ft. propeller. Then, again, the Clement-Bayard motor for the Model C machine arrived only the very day on which the Model C was shipped to the aviation field. There were many delays in getting the motor set up and properly provided with radiator and other accessories.

In view of the fact that the company has not yet succeeded in securing the services of an experienced aviator, Mr. Burgess recently decided to undertake flying one of the Model B machines himself. He has shown considerable proficiency in making short jumps on an even keel, but as he keenly realizes that any damage resulting to the machine from faulty handling on the part of the aviator would be attributed by the public to faults in the biplane itself, he is pursuing a conservative policy and making progress slowly.

Goodyear Four-Inch Tires.

Large size tires are coming more into favor, as they deserve. They ride holes and ruts in fields where small tires catch and buckle the wheels.

The Goodyear Tire and Rubber Co. is now making 20 x 4-in. detachable and 20 x 2-in. single-tube tires, and expects to increase its facilities in this line shortly.

The Anzani Aviation Motor.

The 3-cylinder Anzani motor, which, since an agency was started in the United States, has already sold well, is made in five sizes, ranging from 10 h.p. to 45 h.p. Specifications of these motors follow here below.

The cylinders are radially disposed and are placed at an angle of approximately 60 degrees. Assuming that the cylinders are numbered one, two, three, the explosions will take place first in number one cylinder, then in number three and finally in number two. This distributes the explosions evenly over the circumference, which insures almost perfect balancing of the engine. The cylinders are cast in steel separately, the valve chamber being solid with the chamber wall.

The valves are of the well-known mushroom type of nickel steel; the inlet valves are operated automatically and are situated at the top of the cylinders, while the exhaust valves are located at the side of the cylinders and are operated from a single timing gear.

The air cooling as used for the Anzani motors has proved very efficient. As the motor runs all the time at top speed a tremendous circulation of air is obtained, which insures perfect cooling. Even if the motor is installed in the rear of the machine, the suction caused by the propeller is sufficient to create a draught, which in itself will cool the motor.

The pistons are cast in steel, and are extra light. The connecting rods are attached to a single throw of the crankshaft. The crankshaft is made of nickel steel and is balanced by counterweights, which are taking the place of the flywheel. No camshaft is used and a pinion is attached to the end of the crankshaft, which drives the timing gear, oil pump, and ignition timer.

The G. & A. carburetors have been adopted for the Anzani motors and an extra light model specially constructed for aviation is used. The carburetor operates entirely automatically.

The ignition by 6-volt storage battery and high tension multiple unit coil or by high-tension Bosch magneto.

Splash lubrication. The oil is distributed through all parts of the motor by means of a rotary oil pump.

All motors are fitted with a thrust bearing, which is placed outside of the crankcase, in case a pushing force is required, and inside of the crankcase when a pulling force is needed.

After the success obtained with the 3-cylinder motor Anzani decided to construct also 4 and 5-cylinder motors. The 5-cylinder motor has proved quite a success. This motor is furnished either in 50 or 100 h.p. The same principles of construction of the 3-cylinder motor have been followed for the 5-cylinder. The cylinders are equally distributed over the circumference. Special attention has been given to the lubrication system and the oil is forced by means of a pump through a system of piping to all the bearings of engine.

Anzani is one of the pioneers in the manufacture of aviation engines, and Bleriot's success in crossing the English channel with an Anzani engine established an enviable reputation for this engine.

Among the famous aviators which have used the Anzani engine we can mention the following: Bleriot, Delagrange, Morave, Molon, Ollesiaegers, Leblanc, Masnet, de Lesseps and Balsan.

The following machines have been from time to time "Ansani installed:" Bleriot, Hanriot, Tellier, Vendome, Nieuport and Dubonnet.

AERONAUTICS' PERMANENT EXPOSITION

EVERY day there are visitors to the PERMANENT EXPOSITION, wanting to see this motor or that, tires, magnetos, propellers, et cetera.

The scheme has not been a complete success, by reason of the very fact that some advertisers are too successful in getting orders beyond the immediate supply. Not a single motor has yet been shown in the exhibition room.

Within the last week there have been added several most interesting exhibits, among them a propeller of the American Propeller Co., the Pennsylvania tire exhibit, a sample board of Roebling wire and cable, H. M. H. Mills cloth, Rubel Co. wood, Goodyear fabric, Vacuum Oil Co., etc.

The value of the exhibition to all is at once apparent, and every manufacturer is earnestly asked to send in sample products just as soon as it is at all possible.

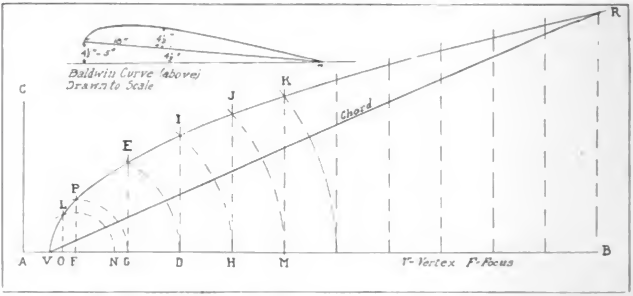
Manufacturers should send a supply of their catalogues and print on their circulars, stationery and letters the fact that they are exhibitors in AERONAUTICS' PERMANENT EXPOSITION.

Every reader of AERONAUTICS is invited to call and inspect the exhibition.

Exhibits are either on hand or promised from the following:—

Hartford Rubber Works Co.	Tires
Wittemann Bros.	Gliders and Supplies
Warner Instrument Co.	Aerometer
Requa-Gibson Co.	Motors and Propellers
Elbridge Engine Co.	Engines
Pennsylvania Rubber Co.	Tires
C. E. Conover Co.	Cloth
Edwin Levick	Photos
Roebling Co.	Wire Cable
El Arco Radiator Co.	Radiators
J. A. Weaver	Wheels, Etc.
Greene Co.	Propellers and Parts
Bosch Magneto Co.	Magnetos
Auto-Aero Supply Co.	Supplies
R. I. V. Co.	Ball Bearings
J. Deltour	Bamboo
J. S. Bretz Co.	Magnetos, Bowden Wire
Aero Supply Co.	Supplies
Charles E. Dressler	Model Maker
Wm. P. Youngs & Bros.	Lumber
Buel H. Green	Turnbuckles
American Propeller Co.	Propellers
Vacuum Oil Co.	Oils
H. M. H. Mills	Cloth
Goodyear T. & R. Co.	Cloth
R. O. Rubel, Jr., & Co.	Woods and Joints

A SIMPLE WAY TO DRAW A PARABOLIC CURVE



TO construct a parabola (in a simple manner) draw the line AB; and AC perpendicular to it. On AB lay off the points, equidistant, F, G, D, etc., as many or as few as desired, and at any arbitrary distance. Draw from these points the perpendiculars FP, GE, DI, etc. With F as a center lay off the arcs GP, DE, HI, etc. Bisect AF at V. Take any point O between V and F, erect perpendicular OL and with F as center and OA as radius cut OL at L. AO = FL. Then VLPE, etc., are points on curve. Draw a "fair" line through the points L, P, E, I, etc., and you have your curve. The chord VR may be drawn between any points, dependent upon the depth of curvature and place of greatest depth desired. Other methods may be found in text-books. The degree of curvature depends on the arbitrary distance AF, and this distance must be selected to give the desired curvature.

A parabola is defined as a curve, any point of which is equidistant from a *given line and a given point*. The given line is AC and the given point F; and all points on curve must be equidistant from these two. Hence, all radii must be taken from F. FE = AG, FJ = AH, etc.

To duplicate a particular rib from printed data (if same is a parabola), where the greatest depth of curve and the length of the chord is given, one may follow this method:

If the greatest depth (or the depth at a certain distance back) is known to be, say, 4½ in., and the chord is 4½ ft. (54 in. divided by 4½ in. = 1 in 12), lay out a trial parabola, as shown in sketch, using some arbitrary distance, say, 3.6 in., for AF. When complete take a straight edge 4½ ft. long and move along the parabola until a T-square laid on the straight-edge will show the necessary depth at the required point. If incorrect redraw, using another distance for AF.

To draw a parabola to a scale of 1 in. to the foot, with the greatest height 4½ in. at 18 in. back, give AF a value of 3/10 in. This can be drawn on cardboard and then cut out with scissors and used thereafter in making drawings by working around.

SUBSCRIBERS EXCHANGE AND FORUM

HELICOPTER PATENT FOR SALE.

W. E. Colyer, Box 391, Saranac Lake, N. Y., has a patent to dispose of, No. 897,738, Sept. 1, 1908.. The machine covered therein is of the helicopter type, comprising two superposed screws or discs on concentric upright shafts driven by bevel gears, and rotating in opposite directions. There is a framework upon which is mounted the engine, driver's seat, etc., with means for shifting the center of gravity by a lever in order to tilt the lifting screws and give the whole apparatus a forward movement. Steering right and left is effected by a vertical rudder at the rear of the frame.

There are two claims in the patent, as follows:

1. A flying machine comprising a main frame, oppositely rotating propellers carried thereby, a supplemental frame suspended from the main frame, said supplemental frame comprising hangers pivotally connected with the main frame, a bottom bar pivotally connected with the hangers, and a link joining the hangers above the bottom bar, drive gearing supported by the main and supplemental frames for driving the propellers, and adjusting means connected with the bottom bar and link of the supplemental frame for shifting the portions of said frame to change the center of gravity of the machine.

2. A flying machine embodying a main frame, propellers carried thereby, a supplemental frame suspended from the main frame, said supplemental frame comprising hangers pivotally connected with the main frame, a bottom bar pivotally connected with the hangers, and a link joining the hangers above the bottom bar, drive gearing supported by the main and supplemental frames for operating the propellers, and adjusting means associated with two of the aforesaid portions of the supplemental frame for shifting said frame to change the center of gravity of the machine.

A NEW PRINCIPLE FOR AUTOMATIC STABILITY.

To the Editor,—Stability under all conditions is a necessity to a successful aeroplane, and an automatic form of maintaining the equilibrium has an incalculable advantage over one that requires the constant attention of a skilled operator. A pendulum arrangement of the weight is cumbersome and awkward, as is also the gyroscope, and a complex superstructure is always at a great disadvantage. Neither do I believe that any permanently rigid type of supporting surface, even such as Bell's tetrahedronal cell system, can successfully meet all conditions.

I set out to find some arrangement of the supporting surfaces simple in construction that would equalize the pressure throughout the machine in all atmospheric disturbances. I wanted something such that as one side of the machine would be tilted up under sudden uneven pressure, the pressure would be equalized and equilibrium restored. I wanted the angle of incidence to alter itself to meet changing conditions, and I finally worked out the following method:

Planes are hinged to each side of a central frame or chassis so that the lines of connection (B B in figures) will diverge sharply to the rear, giving the vertical projection of the central frame the form of a triangle with base to the front. At points near the extremities of the opposing planes a cable is fastened which runs through a pulley (A in Fig. 2) located below the level of the planes.

Now you will note that swinging one of these planes down will increase its angle of incidence, and, as the two sides are joined by the cable, a movement on either side causes an opposing movement on the opposite side. As the cable runs freely on the pulley, extra pressure exerted on one side as by a gust of wind will force that side up, but while doing so would decrease its angle of incidence (to the possible extent of forming a negative angle), lessening the pressure due to the advance of the machine, and not only would that alone tend to preserve equilibrium, but the cable would exert a downward pull on the opposite plane, tending to increase its angle of incidence, consequently equalizing the pressure.

An additional effect may be secured if we raise the pulley; then both planes will be raised and their angle of incidence would be decreased, while lowering the pulley would have the opposite effect, thus transferring to the main supporting planes the function of extra elevator planes.

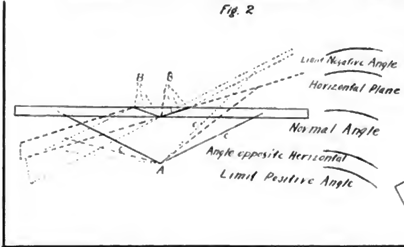
Still further is it to be noticed that if the pulley be held in place by a properly adjusted spring so that changes in pressure due to the relative speed of the machine would raise or lower the pulley changing the angle of incidence to meet the changes.

Bracing and trussing would have to depart from present methods, as the entire strain is concentrated on the cable and hinge connection, but after considerable experiment I believe that a machine of this type may be built lighter, simpler and safer than a so-called rigid type. At least that has been my experience with gliders. The principle may be applied to either monoplanes or biplanes, though several inherent features of the biplane seem to favor its use with that type. Financial circumstances have prevented me from experimenting in reference to the elimination of the rear auxiliary planes, except in the case of gliders, but I think it can be done with advantage in a power driven machine.

Note.—The principle is protected by patent right in this country.

M. B. DUNKLE.

Moscow, Idaho.



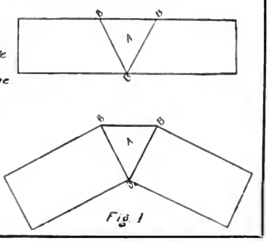


Figure I.

Showing two methods of joining planes to central frame. work.

A. Central frame.
B. Hinged connection of planes to chassis.

Figure II.

Showing action of planes in maintaining lateral stability.

A. Pulley.
B. Hinged connection of planes.
C. Cable or connecting element.

CORRECTION.

To the Editor: I beg to call your attention to the error in the specifications of drawings on pages 105, 106 of September AERONAUTICS. On page 105, paragraph 4, lines 19, 20 and 21 ("The longitudinal action front and rear is simultaneous. There is no transverse action of rear rudders except for emergencies. The advantages) should be in paragraph 1, page 106, lines number 5, 6 and 7.

In paragraph 5, page 105, line 9, you have "(Fig. II), B. E. are adjustable," etc., which should be (Fig. II B), etc.

Any one who is interested enough to make this correction will get a great deal more sense out of the three paragraphs. A number have evidently figured this out for themselves, as I have received several inquiries and will probably receive more. Very truly yours,

J. W. FUHRMANN.

Chicago, Ill.

Ladis Lewkowicz, who will be remembered in connection with the importation of a Bleriot machine into this country, has been able to make a flight of 40 miles in length in Holland.

James Montgomery's play, "The Aviator," was presented by Cohan & Harris in Boston, opening September 5. There were two boxes full of aviators, including Grahame-White, Brookins, Ralph Johnstone, and others. The comedy is cleverly written and very funny.

The "Bleriot XI," which was built by the Church Aeroplane Company, made a big "hit" with the audience, as they were surprised to see a real live machine, which takes five men to hold when the engine is started up.

The Aeronautical Society of Great Britain is going to present Octave Chanute with its gold medal. The ceremony has been delayed by his recent severe illness, but he is expected to be over in England in the autumn. The medal will probably be presented at a public dinner.

The list of aviation pilots of the Aero Club of France now totals 207.

CLASSIFIED ADVERTISEMENTS

FOR SALE 7 h. p. Curtiss motor, good as new, $100; first offer takes it. Max Stupar, 9626 Erie Avenue, So. Chicago, Ill.

SEND $1 For blue prints and instructions for building approved design "Monoplane." Aeroplanes built to order; estimates and prices furnished on any type of machine. J. Horat, Lafayette, Ind., manufacturer of aeroplanes to order.

FOR SALE Curtiss type biplane completed, including motor; real flyer, and with a record; splendid construction; guaranteed perfect. S. W., care AERONAUTICS.

BACK NUMBER WANTED Will pay $1.00 for copy of AERONAUTICS of February, 1910. Address A. C. A., care of AERONAUTICS.

FOR SALE Curtiss 7 h. p. motor, complete, with propeller and all attachments. Price $200. J. W. Roshon, 19 N. Third St., Harrisburg, Pa.

CURTISS type aeroplane; guaranteed to fly; construction perfect in every detail. Address Aeroplane, c. o. AERONAUTICS.

TYPEWRITERS All makes. Caligraphs $8.00; Hammond, Densmore $10.00; Remington, $12.00; Oliver $[illegible]; Underwood $30.00. 15 days' free trial and year's guarantee. Harlem Typewriter Exchange, Dept. F, 18, 217 West 125th St., New York City.

THE AMERICAN AVIATION SCHOOL.

CORRESPONDENCE COURSE AND FINAL TRIALS ON BEST AEROPLANES. EMPLOYMENT FURNISHED TO COMPETENT AVIATORS. BEST OF TEACHERS ASSURED. UNDER THE AUSPICES OF THE AMERICAN AERONAUTICAL SOCIETY. ADDRESS 1950 W. NORTH AVENUE, CHICAGO.

NOTES FROM ABROAD

PASSENGER SLOW AND FAST SPEED RECORD.

Bouy, France, Aug. 16.—Lieut. Mailfert, with a passenger, in a Farman machine, flew 12 kil. in 25 minutes, an average of 17.69 m. p. h. Returning, the distance was covered in 8 minutes, a speed of 55.8 m. p. h., the difference being due to the wind.

GERMAN CROSS-COUNTRY RACE.

Frankfort, Germany, Aug. 17.—Five machines started in a cross-country race from Frankfort to Mannheim, for $10,000 in prizes. Thelen (Wright) with a passenger, had to land at Mains on account of cracked cylinder. Weineziers (Antoinette) and Jeannin (Farman) also reached Mains. Two days later the balance of the trip was made. Jeannin shipped his machine back and made the flight in one stage in 1¾ hours. Lochner and Lindpainter also covered the course.

FLIGHT CROSS-COUNTRY IN AUSTRIA.

Vienna, Austria, Aug. 18.—Adolf Warchalowski flew in his own type machine from Wiener-Neustadt to Vienna and back, covering 110 kil. in 1 hour and 30 minutes.

THIRTEENTH VICTIM OF POWER MACHINE.

Rome, Italy, Aug. 20.—Lieutenant Pasqua Vivaldi of the Italian army was killed this morning by a fall from his Farman aeroplane. He had made a trip in the early morning from the military aviation field at Centocelle to Civita Vecchia on the Mediterranean sea, thirty-eight miles from Rome, and was returning to Rome when the accident happened. A few miles outside of Rome the machine dashed to earth, for some unexplained reason. At the time of the accident the aeroplane was 300 ft. high.

ANOTHER DEATH.

Flushing, Holland, Aug. 27.—Clement Van Maasdyck, flying at a height of 150 ft. when machine stopped and fell perpendicular to the ground; the aviator fell on his back, the full weight of the engine on his breast, and was instantly killed.

FLIES ACROSS LAKE GENEVA.

Geneva, Aug. 28.—Armand Defaux today won the Swiss aviation club's prize for a flight across Lake Geneva in an aeroplane. Starting at Noville, four miles south of Montreux, he flew to Cologne, near Geneva.

The distance, about forty miles, was negotiated by M. Defaux in fifty-six minutes.

FIVE PERSONS ON A BIPLANE.

Lille, France, Aug. 29.—Louis Breguet, the aviator, took up four passengers in his biplane besides himself. The total weight sustained by his machine, including the gasoline, was 921 pounds. This feat is believed to be a world's record.

Paris, Aug. 29.—M. Bielovucci made a sensational aeroplane flight above Paris today, and circled above the Eiffel Tower at a height of 2,450 feet.

NEW WORLD HEIGHT RECORD.

Havre, France, Aug. 29.—Leon Morane, in his Bleriot, broke the world's altitude record, reaching a height of 7,054 ft.

Ostend, Belgium, Sept. 2.—Miss Helene Dutrieu, the French aviator, established a new record for woman pilots in distance and altitude with a passenger today. With a companion in her Farman aeroplane Miss Dutrieu flew from this city to Bruges and returned, without alighting, a distance of about 28 miles. At Bruges she circled above the famous belfry of Les Halles, at a height of 1,300 feet.

ANOTHER FAST PASSENGER FLIGHT.

Douai, France, Sept. 2.—A military aeroplane piloted by Louis Breguet and carrying also Capt. Madiot, who made observations, flew from here to Arras and return today at a rate of 57¾ miles an hour, establishing a new record for speed with a passenger.

WORLD HIGH RECORD AGAIN BROKEN.

Beauville, France, Sept. 3.—Leon Morane broke the world's altitude record again today. He smashed his own previous figure for altitude and made a new mark of 8,468 ft. His propeller stopped at 4,500 ft. and the glide to earth was made without power.

FLIES FROM PARIS TO BORDEAUX.

Bordeaux, France, Sept. 3.—M. Bielovucci arrived at 12:25 p. m. today from Angouleme, completing the final stage of his flight from Paris to Bordeaux. He made the trip with only three intermediate stops. Bielovucci's time from Paris to Bordeaux was 6 hours 15 minutes of actual flying and the route covered is estimated at 335 miles.

The first stage was to Orleans, 110 kil., on Sept. 1. The following morning he flew 170 kil. to Chatellerault in 1 hour and 45 minutes. After lunch he reascended and continued to Angouleme, 135 kil. The next morning he completed the trip. The speed for the 170 kil. stage figures 60 m. p. h. average. His machine is a Voisin.

MOISSANT FINALLY REACHES LONDON.

London, Sept. 6.—John B. Moissant, the American aviator who started from Paris on August 16 for a flight to London in his Bleriot, and who after crossing the English Channel with his mechanician as a passenger, met with several mishaps, finally reached the Crystal Palace at 5:30 o'clock this afternoon. After circling the palace he flew off in the direction of Beckenham without alighting.

Moissant, with his mechanician, Albert Fileux, as a passenger, left Paris Aug. 16, and reached Amiens without mishap the same evening. The next day he left Amiens and crossed the Channel with a passenger, thereby making a new record. He was compelled to descend at Tilmanstone, about seventy miles from London, because of high winds. He resumed his journey to London the next day, but was compelled to land at Upchurch, about thirty-five miles from London, on account of the wrecking of his propeller and damage to his planes.

He started again on August 20, but met with another accident after going about five miles and landing at a place between Gillingham and Twydale. He made other attempts to reach London since that time, but was compelled to descend after making very little progress.

Moissant started again this morning, but had to come down at Oxford, some twenty-five miles from London. He made slight repairs here and then started on the flight which brought him to his goal early this evening.

NEW RECORD FOR HEIGHT.

Issy, Sept. 8.—George Chavez, a young Peruvian aviator, broke the world's record for height, rising in a 50 h. p. Bleriot monoplane 8,792 ft. in a flight taking 41 minutes.

DESTRUCTION OF ZEPPELIN VI.

Baden Baden, Germany, Sept. 14.—The Zeppelin VI., took fire after an explosion, while being warped into her shed.

The Zeppelin VI. during the past eighteen days has made thirty-four passenger trips, covering about 2,000 miles, and carrying more than 300 passengers. The flights of the dirigible were made regularly, often in unfavorable weather. The airship ascended at 11:20 o'clock today with twelve passengers for a trip to Heilbronn. It had covered about twenty miles, when a motor in the forward gondola acted badly. It was impossible to effect satisfactory repairs, and after some time had been spent in the futile effort, the airship returned here.

The Zeppelin VI. will be best remembered by its notable flight from Friedrichshafen to Berlin, when it carried Count Zeppelin, the inventor, on a visit to Emperor William. The airship was built in 1908, but had since been altered and enlarged. Suspended from the center was a luxuriously furnished cabin. She carried a crew of ten men.

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Make all checks or money orders free of exchange and payable to AERONAUTICS. Do not send currency. No foreign stamps accepted. :: :: ::

American Sportsmanship.

FOR the sake of American sportsmanship, it must be urged that, in defending trophies gained by Americans, apparatus of home manufacture be employed.

It is with sincere regret that one remembers it seemed desirable by some of our representatives to use foreign made balloons in the four past Gordon Bennett balloon races.

The 1906 Gordon Bennett was won for America in a foreign made balloon, the only entry. In 1907, at St. Louis, but one of our three balloons was of American make. At Berlin, in 1908, two of the three American balloons were made in Europe. In 1909 we had but one representative, Mix, who is looked upon in France as a Frenchman, and he used a French built aerostat.

It should be made a rule that defenders of American sports use apparatus of home make. Is it not a hollow victory to win from France an American cup in a French balloon?

Will the plaudits of the American people be very hearty if American sportsmen see fit to use a foreign balloon or a foreign aeroplane in the two international events to be held here this Fall?

IT is sincerely hoped that our representatives in the aviation race will be picked after elimination trials. When, in 1907, AERONAUTICS urged elimination trials for the 1908 Gordon Bennett balloon race one of the officials of the Aero Club of America raised holy protest at the bare suggestion of such a socialistic scheme. The idea! With satisfaction AERONAUTICS views the elimination race at Indianapolis.

Dr. H. W. Walden, a plucky would-be aviator, who recently had a rather narrow escape from serious injury in his first attempt at flight with a new monoplane, tells of an amusing incident relative to the accident.

After having his broken collarbone and three ribs bandaged by the local hospital surgeons, he proceeded to the railway station to take the train for New York. While waiting on the platform he noticed a man walking nervously up and down and finally the object of his concern addressed him.

"Are you not Dr. Walden?" said he.

"Yes."

"Well, I thought you were dead! I'm the undertaker of the town."

Personal.

D. E. Linquent, Esq.

Dear Sir:—There evidently is a well-founded impression among the aeronautically inclined in this country that I am publishing AERONAUTICS for the benefit of my health; or else they imagine the magazine is some wonderfully productive gold mine.

I freely admit that the financial health of the paper has improved considerably within the past year, and it might be now considered convalescent. I don't like to think of the possibility of a relapse.

Other publications of an aeronautical nature have come and gone or have leanings in the latter direction. They never "come back"—to stay. But AERONAUTICS has always managed to pull through any sinking spells, thanks to the hearty support of its ever-increasing readers, who have appreciated what I have been trying to accomplish.

Now, please don't think that your continued support is not desired—for it is.

UNDRESSED FACTS.

There is quite a number of unpaid renewals on the records. The delinquents have had several requests to come across, but they have NOT responded, either one way or the other—not even when there was inclosed an addressed postal with the official portrait of Uncle Sam in the corner.

If I can't get attention for my letters, there is only one thing left to do—and I have done it herewith. If anything is read through, it's AERONAUTICS. I know you want the magazine for you began when it wasn't quite so good as it is now. I know many of you personally, and I am certain you do not mean to let your subscription cancel by default.

"DO IT NOW."

Very truly yours,

E. L. Jones

National Balloon Race Results.

New York, Sept. 22—Unofficial figures were given out today of the standing of the contestants in the National Championship Race and elimination race for the Gordon Bennett from Indianapolis. These are subject to revision by Mr. Williams Welch of the U. S. Signal Office.

A. R. Hawley, to Warrenton, Va., 460 m.
H. E. Honeywell, to Brush Valley, Pa., 385 m.
S. L. Von Phul, to Trafford, Pa., 380 m.
J. H. Wade, Jr., to Showalter, Va., 375 m.
W. T. Assmann, to McFarland, W. Va., 320 m.
Chas. Walsh, to W. Milton, O., 295 m.
A. T. Atherholt, to Dexter, O., 235 m.
C. B. Harmon, to Powellsville, O., 180 m.
C. G. Fisher, no record.

Hawley, Honeywell and Von Phul will represent America in the Gordon Bennett from St. Louis, Oct. 17. No records were broken.

Notice.

It is found necessary to state that A. C. GRANT has no connection with AERONAUTICS. We will not be responsible for any agreements made by him in our name. He has no authority to use the name of the magazine in any way whatever.

AERONAUTICS PRESS, INC.

THRILLING NIGHT BALLOON TRIP

By Dr. Thomas E. Eldridge.

THE voyage from Philadelphia to Danbury, N. H., Aug. 3 and 4, was a brilliant success, and surpassed any other flight I have ever undertaken. The peculiar feature of this trip was that it was made chiefly in total darkness, a rare experience, that has peculiar charms such as are impossible to describe. Mr. Welsh Strawbridge and myself ascended from Point Breeze at 9:28 on Wednesday night, rising immediately to an altitude of about 1,000 ft., at which height we passed in a north-northeasterly direction over the city. As we left the city, we passed into total darkness—darkness so deep that we could not determine what were the particular points over which we were passing. Indeed, so far as locality was concerned, it was possible only to distinguish the general character of the country.

At 12:35 we passed over a number of mountains, which we realized through our drag rope catching. At 1:10 a. m. we passed over another river, and at that point we found ourselves buried in the deepest and most oppressive darkness.

SAILING OVER THE MOUNTAINS.

All through the night we passed over mountains, lakes, towns and rivers

All this time we were enveloped in such darkness as is impossible for me to describe. I can only say that as we were passing through it, I thought of the first chapter of the Book of Genesis, of the chaos that existed before the world began and of the terrible immensity of space. It was a darkness overwhelming, and both Mr. Strawbridge and I were glad when we saw the first signs of daybreak. That was about 4:10 a. m. Over the great chains of mountains we could see the inky blackness gradually fading into gray.

SAW WONDERFUL SUNRISE.

And such a color effect as we saw in the transition of the black through the various shades of gray is something that cannot be described; to be appreciated it must be seen. And when the daylight disclosed to us the world below, we agreed that never before had we seen such wild, rugged scenery as that lying at our feet. Finally we saw the sun, a great globe of red fire, climbing over the mountains and shedding his light upon a beautifully cultivated region over which the balloon was passing. At 5:10 we went over another river, and then we beheld all the beauties of sunrise, all the gorgeous tints and shades of red and yellow and blue.

All during the trip we had not suffered from cold, but about 7 o'clock Thursday morning we were obliged to put on a little extra clothing. At that time we passed through a hailstorm, the particles of which were about the size of sago kernels. That was at an altitude of 13,750 ft. About 8 o'clock we rose to a height of 15,100 ft.; about which time, we afterward learned, we had passed over the Rugged Mountains and the Kearsarge Mountains, the highest points in New Hampshire. At that time, too, there was a thunder storm going on beneath us, and we could see the lightning flash and hear the thunder. After that we saw wonderful cloud effects.

All around us as far as we could see were immense towers of clouds, thousands of feet high, forming a gigantic basin, in the middle of which floated the balloon. These clouds gradually approached us from every side until we were entirely enveloped in them. So dense, indeed, were they that we could not see the balloon's bag above us. At the same time the clouds caused the gas in the balloon to condense and we then knew that it was time for us to descend.

From an altitude of 15,100 ft. we dropped into the midst of woods two and a half miles north of Danbury, Merrimac county, N. H. As we descended the balloon was caught between four trees and we were obliged to climb down to the ground. Mr. Maxfield, the proprietor of the farm, greeted us, and at once, with his men, proceeded to chop down the trees so that the balloon might be disentangled.

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ASCENSIONS

NOTE: Asterisk (*) denotes trips of 100 miles or over.

*Point Breeze, Pa., Aug. 16.—Dr. Thos. Edwin Eldridge, pilot, Dr. George H. Simmerman and Ira L. Brown in the "Phila. II" to Negro Mt., Md., 222.37 miles. The party left at 8:27 p. m. and rose above the clouds in the moonlight. The log says: "A most wonderful effect. The dull, sombre shades of gray contrasted markedly from the light, airy effect by day. Passed over Hanover and Gettysburg at 2 a. m. At 3 a. m. crossed the Allegheny mountains. The sight was wild and picturesque at daybreak, when the sun lifted the balloon to 14,000 ft. The landing was at 9:05 a. m." Dr. Eldridge now holds the Philadelphia record for altitude, distance and duration.

Hamilton, O., Aug. 18.—Mr. and Mrs. George R. Howard, Mrs. Charles Trontman and Mr. and Mrs. Albert Holz in the "Drifter" to Dry Ridge, Ky. Distance 50 miles, duration 3½ hours, altitude 5,700 ft.

Pt. Breeze, Philadelphia, Aug. 25.—A. Leo Stevens, Arthur T. Atherholt and Conyers B. Graham in the "Penn. I" on a night trip, landing at South River, N. J., at 4:45 a. m., leaving at 3:25 a. m. Distance, 55 miles.

Lowell, Mass., Aug. 27.—J. Walter Flagg, pilot, John W. Harrington and Henry J. Murch, to Haverhill, Mass., a distance of about 17 miles. Duration 1 hour and 20 minutes.

Topeka Club Buys Honeywell Balloon.

St. Louis, Mo., Aug. 28.—H. E. Honewell piloted Messrs. Emerson, Cole and Sweet of the Aero Club of Topeka on a demonstration trip. After making three landings, the last being near Jerseyville, Ill., the party hurried back to St. Louis with the balloon. The Topeka men bought the balloon for the use of the members of the club. It has a capacity of 40,000 cu. ft. In addition to the four people, 16 bags of ballast were carried and besides that, two landings along the way were made. At the final descent, there were 10 bags still left.

Mr. Honeywell is using his balloon "Centennial" in the Indianapolis race, and other entrants have Honeywell-built balloons. A new dirigible balloon has been completed by him along original lines which will soon be given a try-out. The gas envelope is flat on the under side. There is a large rudder for controlling the lateral movement of the balloon attached to the stern, while on the bow there is fixed a larger plane for horizontal steering. The machine is provided with an aluminum propeller and has a capacity of 9,080 cubic feet of gas.

The French-American Balloon Company, of which Mr. Honeywell is director, has done a surprising business in the manufacture of balloons. The gas balloons have gained and hold many records.

Indianapolis, Ind., Sept. 3.—Capt. G. L. Bumbaugh, Ray Harroun and F. L. Galnaw to Millersville, Ind.

Pt. Breeze, Philadelphia, Sept. 3.—A. T. Atherholt, pilot, H. H. Knerr and Clarence P. Wynne in the "Penn. I." to Pipersville, Pa., a distance of 33 miles. The ascent was made in a driving rain. The balloon was allowed to go up to 9,000 feet without being able to get out of the clouds into clear sky. No land could be seen and even the statoscope failed to work and cigarette papers were used in its place.

Jackson, Mich., Sept. 3.—J. H. Wade, Jr., and A. Leo Stevens in the new Wade balloon "Buckeye."

Indianapolis Speedway, Sept. 5.—G. L. Bumbaugh, Dr. L. E. Custer and Dr. C. W. Mills in the "Indiana," had an exciting experience in an ascent at the close of the auto races. A storm came up just after getting up and the rain came down in sheets. Up and down the wind took the balloon and the aeronauts did not dare use the little ballast they took along. The drag rope caught electric light wires on descending and broke them. The final landing was in the treetops. The trip lasted about 25 minutes.

Hamilton, O., Sept. 6.—George R. Howard, George Mosner, Chas. Trautman and Edward Penrod in the "Drifter" to Newark, O.

CLUB NEWS

The **Aero Club of Pennsylvania** has had delivered a new 35,000-foot Stevens balloon, called the "Pennsylvania I." A "Balloon Section" has been formed, to the treasury of which a limited number of members pay $2.50 weekly for ten weeks. Each week lots are drawn and three members have the privilege of an ascent. See "Ascensions" for records.

A series of flight exhibitions will be held at the club aviation grounds at Clementon, N. J., the first being on September 24-25, when Charles F. Willard will make his second appearance before Philadelphians. It is possible that Graham-White and Harmon will fly the following week.

The Aeronautical Society, at an extraordinarily well attended meeting on September 8th, was favored with an interesting and valuable talk on autogenous welding, by Mr. A. Davis, of the Davis-Bournonville Co. A complete apparatus was used for demonstrating. Holes were cut in thick steel, steel tubes welded together and plates of steel cut quickly in two by the 2,300 degree flame of an oxy-acetelin blowpipe.

On August 25th was held a discussion on "New Devices." Wilbur R. Kimball described his new model. G. L. Lawrence told of his experiences in aeronautics, beginning with the hot-air balloon. With his experience as an actor to augment his effervescent humor, his tale was well worth hearing.

The **Aero Club of Long Island** has been incorporated with the Secretary of State to carry on experiments in aerodynamics and to advance the science and sport of aviation. The directors for the first year are: Howard C. Brown and Charles Wald, of Brooklyn; Francis C. Willson, of Flushing; Henry L. Newell, Jr., of Richmond Hill, and John H. Lisle, of Glen Cove.

Book Note.

Le no 12 de la *Technique aéronautique* (15 juin 1910) contient une étude expérimentale des *hélices propulsives* par M. le capitaine Dorand, du laboratoire des recherches relatives à l'aérostation militaire. Ce travail, d'un caractère définitif, aboutit à des conclusions pratiques d'une grande portée au point de vue de l'agencement des aéroplanes.

Dans le meme numéro, M. Riester-Picard, décrit un nouveau type d'aéroplane à *vitesse variable*. M. le capitaine Do, du bataillon des aérostiers militaires, établit la théorie du guiderope (suite et à suivre); M. Rabbeno émet des apercus théoriques et expérimentaux sur les hélices au point fixe . . . , etc.

Prochainement la suite des *papiers inédits du colonel Ch. Renard* (hélicoptère et hélico-aéroplane.)

L'Aéroplane Pour Tous, par MM. Lelasseux et Marque, Ingénieurs E. C. P., suivi de *Les Deux Ecoles D'Aviation*, par M. Paul Painlevé, de l'Institut.—Un volume illustré.—Prix : 2 francs.—*Librairie Aéronautique*, 32, *rue Madame, Paris.*

Voici le livre qui va permettre à chacun de se mettre en quelques instants au courant de la grande question de l'aéroplane, dont il n'est plus permis à personne d'ignorer les principes; en un style qui sait etre scientifique sans etre ni rebutant ni fastidieux, par des raisonnements mis à la portée de tous, sans l'emploi d'aucune formule mathématique, ce beau volume contient une théorie excessivement claire de l'aéroplane et de l'emploi de ses organes de direction et de propulsion. Observant un juste milieu entre l'ouvrage de vulgarisation par trop banal et le précis scientifique de l'ingénieur, cette étude renferme un tableau complet de l'aviation depuis son début jusqu'aux dernières prouesses de nos aviateurs. Elle permet à tout le monde de se faire une idée nette de la locomotion nouvelle et d'en causer sans commettre d'erreurs.

De nombreuses photographies, des dessins schématiques et des tableaux d'ensemble complètent cet ouvrage dont la valeur est affirmée par son tirage, qui atteint aujour-d'hui la 24th édition.

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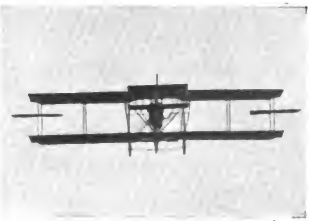

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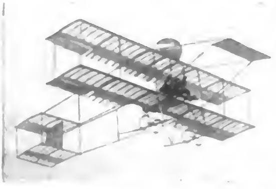

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Vol. VII NOVEMBER, 1910 No. 5

AERONAUTICS

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Vol. VII. Aeronautics No. 5

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AERONAUTICS AND WAR

By Lieut.-Col. W. A. Glassford.

SIGNAL CORPS, U. S. ARMY.

PHILOSOPHICALLY, it would no doubt be interesting to trace the order of thought on the subject of man's flying that obtained from remote antiquity down to the time of the invention of the hot air balloon in 1782, but it would not be of any use in a technical sense. The only advantage that might be derived from such an inquiry would be a better understanding of the feeling which actuates the public mind on this subject today. The general notions that prevailed down to the time of the discovery of the barometer and of the air pump were not of a scientific order, and their study would mainly lead to a contemplation of the superstitions that have retarded the development not only of aeronautics but of man.

The Egyptians, 4,000 years ago, possessed the necessary skill for making a hot air balloon with its equipments—cordage, basket and all, and so doubtless did Chinamen, and many other peoples who then inhabited the earth. It seems very certain, however, that it never occurred to any of them to try their skill in this direction. The Egyptians believed that men flew at times, but when they did they first turned into birds; they certainly never believed that man would ever be able to rise in the air, unaided by occult or supernatural power. And this is true of all peoples down to the seventeenth century.

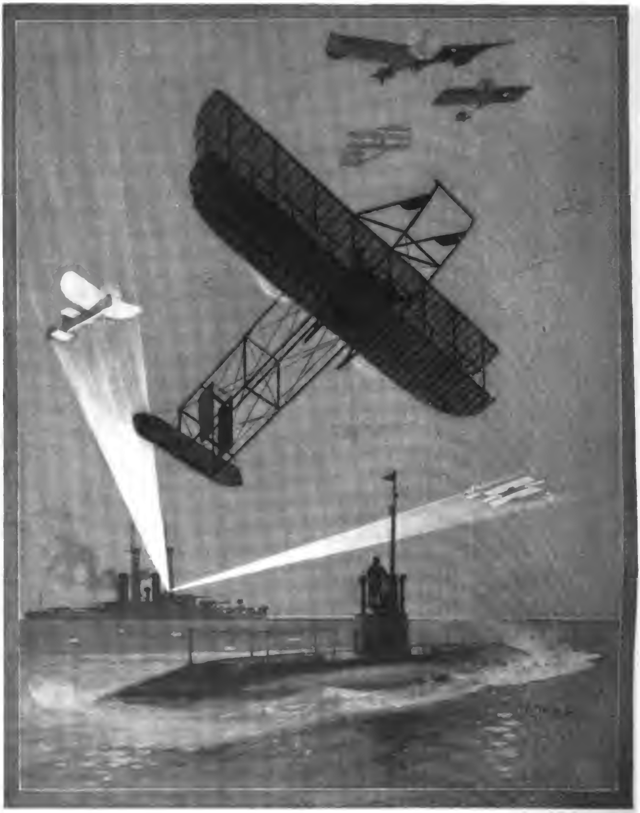
Man, down to a recent epoch, was not in the possession of the necessary facts or natural principles to enable him to think on the subject intelligently; furthermore, the kind of notions he cherished was frankly hostile to every thought that might lead to the discovery of principles useful in the development of aerial navigation. He peopled the air with gods, angels, spirits, jinns, devils and witches and a host of other imaginary beings, and gave to them the absolute rule of it. The atmosphere being, in his imagination, the special realm of the deities and of the evil spirits, might not be trespassed upon.

Allusions to man's flying are not wanting in the stories and legends of antiquity; but they are generally in some way connected with mystic or supernatural notions. Nowhere do we find the simple belief that a man unaided by supernatural power would ever be able to rise in the air. Among the legendary flying machines none occupies a more conspicuous place than the flying horse. Originating in India, its performances are recorded in the stories of Egypt and of Greece, of Persia and of Arabia; its career ending in the memorable ride of Don Quixote. We have, also, accounts of flying chairs and of flying carpets, and of other things, all capable of carrying passengers, when moved by magic power or by enchantment. During the middle ages many men, also, were supposed to have acquired the art of flying through their knowledge of magic and necromancy.

Such were the ideas that prevailed on the subject of aerial navigation down to the discovery of the barometer in 1645. The few suggestions that are met with previous to this epoch, which do not fall into the category above mentioned, are so devoid of detail in their description as to make their consideration useless. Speculation concerning aeronautics gave rise to no tangible ideas on the subject down to the discoveries which led to the construction of the barometer and of the air pump, and the further discoveries which followed experiments with these instruments. The discovery of the barometer marks the dawn of knowledge that led to the development of aeronautics. Aeronautics has sprung from a purely scientific order of thought, and its development has depended in all its stages upon the progress of science and the consequent development of the modern industries.

The barometer brought to light properties of the atmosphere that are of prime importance in aeronautics, but they were of a nature so contrary to the then accepted notions that they gave rise to endless discussions as to the truth of the new discoveries. Nevertheless from this time on we meet with suggestions in which some of the true elements of the problem are taken into consideration. A knowledge of the facts that the atmosphere has weight and that its density diminishes as the altitude increases and that it is possible to produce a vacuum, could not fail in time to influence speculation on aerial navigation.

In a comical history of a voyage to the moon, which appeared about this time, mention is made of smoke as furnishing the lifting power used in a flying machine. In 1670 we meet with a proposition to utilize a vacuum contained in large, thin, globular copper vessels, with a sufficient description of the apparatus to show that the author was totally ignorant of the pressure of the atmosphere and of course unaware of the fact that his vessels could not possibly contain a vacuum, and be light enough to rise in the air.



Nearly a century later, in 1755, we meet with a proposition to collect fine diffuse air above the highest mountains and to inclose it in a bag of enormous dimensions, bigger than the city of Avignon, and composed of the strongest sail cloth, with which apparatus the author thought a whole army with its munitions of war might be transported at one time through the air. These suggestions, however absurd, in part, yet show the influence of a better understanding of the true nature of the atmosphere as revealed by the then recent discoveries.

The discovery of hydrogen in 1765 brought into the problem of aerial navigation its most important factor, a gas fourteen times lighter than air. Nothing now was lacking in order to produce the balloon but to inclose this gas in a suitable vessel. The industries of the epoch furnished all the necessary materials for

[*Continued on page 184*]

AERONAUTICS IN THE ARGENTINE

By Henry Helm Clayton.

THE Argentine Aero Club, like most aero clubs, began with ballooning. The club was founded the 13th of January, 1908, under the presidency of Engineer George Newbery, who made his first ascension in a free balloon on the 25th of December of the preceding year, accompanying Senor Anchorena in the balloon "Pampero" of 1.200 cubic metres capacity. The balloon rose from the ground of the Sociedad Sportiva in Palerino, and after crossing the La Plata river, impelled by a pampero wind, descended in the department of Conchillas, Uruguay.

The "Pampero" made nine ascents, during which there qualified as pilots Engineer Newbery, Dr. Edward Newbery and Major Waldino Correa. In a night ascent made by Dr. Edward Newbery, accompanied by Sargeant Edward Romero, this balloon was lost, and nothing has since been heard of the pilot, his companion or the balloon. This occurred on the night of Oct. 17, 1908.

Owing to this misfortune, the members of the Aero Club dispersed, and for some time aerostation was put aside, since all were impressed by this loss of a gentleman widely known socially and of a useful soldier. Nevertheless, one day Engineer Horacio Anasagasti, one of the directors of the Argentine Aero Club, bought the balloon "El Patriota," and made an ascension on the 24th of January, 1909, accompanied by Engineer George Newbery as pilot.

Following other successful ascensions, the president of the Club undertook to reorganize the association, and his patient efforts were rewarded with complete success, since the reorganized club has a full membership amounting to 200 members.

Slowly but steadily the Club grew stronger, possessing at present a park for aerostation, a club house, and four balloons, with all accessories. The club house contains a room for the secretary, a kitchen, living rooms for the attendants, toilets, and an ample aerodrome, where concourses of aviation are held periodically.

The balloons "Edward Newbery," "Buenos Aires," "Patriota," and Huracan," of 2.200, 1,800, 1.200 and 800 cubic meters, respectively, are in use every Sunday and holiday, when the weather conditions are favorable, for pleasure ascensions and for distance or point-to-point racing, etc.

Among the ascensions notable for the distance run, the hour at which it was made, and the fact that it has crossed foreign countries, may be mentioned that completed by the president of the Club, Engineer George Newbery, who in the balloon "Huracan" began a voyage at 11 p. m. on December 25, 1909, from the grounds of the gas company, Rio de la Plata, situated in Belgrand, and impelled by a strong pampero wind, crossed the river La Plata into the Republic of Uruguay, crossed centrally over the entire length of that country and descended in Bagi, in the state of Rio Grande do Sud, Brazil, having run a straight line distance of 550 kilometers in 13 hours.

An aviation meeting was held in April, 1910, under the auspices of the Club. At this meet there were entered several of the well-known French machines, as the Bleriot and Farman, and the meeting proved a great sucess. The president of the Club made the necessary flights to secure a pilot's license. Other members of the Club have in contemplation taking out a pilot's license, and it is possible that in a short time this will become a very important part of the Club's activity. But at present ballooning continues to be the most important sport, and in the point-to-point racing, which occurs very frequently, the four balloons belonging to the Club are usually seen in the air at once.

For the convenience of the members of the Club, most of whom live in Buenos Aires, the balloon park is in the suburbs of the city only a

Left to Right
Major WALDINO CORREA
Sr. H. ANASAGASTI
Dr. EDW. NEWBERY

Pres. Geo. Newbery

few miles from the harbor in the mouth of the La Plata. A short distance to the eastward lies the ocean. Fortunately the prevailing winds are from the northeast and the members of the Club have found by experience that they can float inland on this surface wind and then rise into a contrary or eastward moving current and return almost to their landing point. These two opposing currents are made much use of in the point-to-point races. In a recent contest of this kind some of the pilots went far out to sea in the upper current, and then sinking into the lower, returned to the land. But feats of this kind, and the nearness of the sea for other reasons, always subjects the pilots to more or less danger, and one of them has fallen into the sea so many times that he is called the "aquatic" pilot.

The Aero Club has rooms in the building with the Automobile Club, where they hold business and social meetings, and entertain their friends. This building is a fine house with ample rooms for entertainments; a good library, including a library of aeronautics and a splendid cuisine. Many of the members of the Aero Club are enthusiastic automobilists, and are now greatly interested in the art of aviation.

Owing to the fact that he was a member of the Aero Club of New England and a pilot in the Aero Club of America, the writer was made an honorary member of the Argentine Aero Club, and was royally entertained by the president, Engineer Newbery, and had the pleasure of meeting most of the prominent members, including St. H. Anasagasti and G. G. Davis, chief of the Argentine Weather Service. The members of the Aero Club make much use of the reports of the weather service in planning their voyages, and frequently carry instruments with them belonging to the service for obtaining records in the upper air. The observations made by the pilots in regard to the directions of the air currents at different heights are adding much to the knowledge of the air movements in the Southern Hemisphere.

AEROPLANES FLYING IN MEXICO

By E. L. Ramsey.

The new airship now being constructed in San Antonio for the Marquis de Casanova of Mexico City, met with an accident in the building shed, according to a letter received by the Marquis, and its completion will probably be delayed for three or four weeks, as it will be necessary to send to France for duplicates of the parts injured in the mishap.

The Marquis expects to go to the Texas city to bring back the new flyer sometime within the next month, and immediately thereafter will make flights about the city.

Among the many new devices attached to the machine will be a rudder of novel design partly built from the plans of the Marquis, who has had considerable experience with aerial craft in France. The entire control of rudder, planes and engine will be from the steering wheel. The engine being situated immediately back of the driver's seat, and all parts within easy reach of the aviator.

Miguel Lebrija, the aeronaut who made an ascension last Sunday morning, descended about 6 o'clock that same evening at a place about three kilometers from Cuatitlan on the line of the National Railway of Mexico, having covered during the six and a half hours he was in the air a little over fifty kilometers.

Lebrija said that he obtained a height of about 1,000 meters above the height of the Valley of Mexico, which would make his height above sea level about 10,500 feet. He is enthusiastic over the trip and claims that with his larger balloon he will establish a record for twenty-four hours.

Captain Nicholas Martinez of the Mexican Army, and who is one of the attendants of General Bernardo Reyes, who at present is making a tour of France, made a very successful flight in an aeroplane, accompanied by a captain of the Spanish Army, Sr. Samaniego, and by the Spanish aviator, Laygori.

WHO WILL WIN THE GORDON BENNETT?

The newspaper man ran across a pessimist the other day who seemed in great distress. The P. unburdened himself to the N. M. in this fashion:

"Do you realize," said he, "that the prospect for American supremacy in the Gordon Bennett aviation race, at least, is apparently very poor? Now, in other events during the Belmont Park meet we have a chance for duration and height records with machines already making flights. There is no question that a Wright machine will stay in the air as long and go as high as any other machine which may be brought into competition. It might be said, without any suggestion of a 'knock' that none of the Curtiss aviators have shown thus far form enough to warrant beating on duration and height performances, comparable with existing records. And none of the Wright machines at present known to the public can vie with the latest foreign speed record, although the Wright company is reported as building a special fast machine. Curtiss' fastest speed yet made with his machine figures 52.58 m. p. h., at the Boston meet."

"How about the amateurs"? asked the N. M.

"Clifford B. Harmon seems to be the only amateur in this country who has done much flying, and that has been done with a foreign machine. He certainly stands no chance in a speed contest, such as the Gordon Bennett is. His two-hour flight entitles him to consideration in duration flights."

"How about Hamilton?"

"I'll admit," said the pessimistic one, "that there you have something. Hamilton may find his 110 h. p. Christie motor of sufficient power to bring him into the lists as a possibility."

"It is now quite certain that Curtiss is building a special machine and motor capable of great speed," vouchsafed the N. M.

"Yes, but it is not at all certain that he will even fly it at Belmont Park. He has been invited to defend the cup with two others to be selected but has not yet given an answer to the club. The Aero Club of America, it is said on good authority, has offered to provide a 'retainer' fee, but it was not prepared to state the amount.

"If Curtiss should find his new machine to be faster than the record made by any other aviator in the meet, he may challenge the Belmont Park fastest flyer to a speed duel. Such a race, undoubtedly, would result in bringing a tremendous crowd to whatever spot Curtiss and his opponent might select for the scene of the conflict."

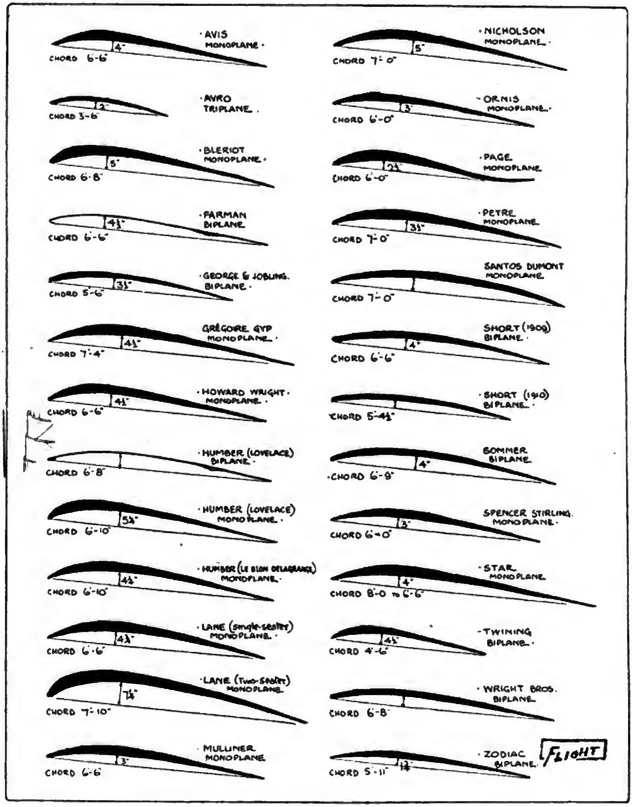
Here the P. O. brought out a table of figures he had been working on and offered them in evidence.

"The speed record of the world," he said, "is now 66.18 m. p. h., made in a Bleriot machine with a 100 h. p. Gnome engine, by Morane. The fastest American speed records are:

"52.58 m. p. h., Curtiss, Boston, 1910.

"47.43 m. p. h., O. Wright, Washington, 1909.

Here the N. M. excused himself and sought more congenial company.



Wing Sections

The above diagrams afford an interesting comparison of the wing sections of aeroplanes exhibited at the recent British Show. They are all drawn to a common scale, but have been set at an arbitrary angle of incidence, which does not necessarily represent that of the aeroplane in actual flight.—*Courtesy of our esteemed and valuable contemporary "FLIGHT," of London.*

NOTES ON FRAMING OF AEROPLANES

ADAPTED FROM AN ARTICLE

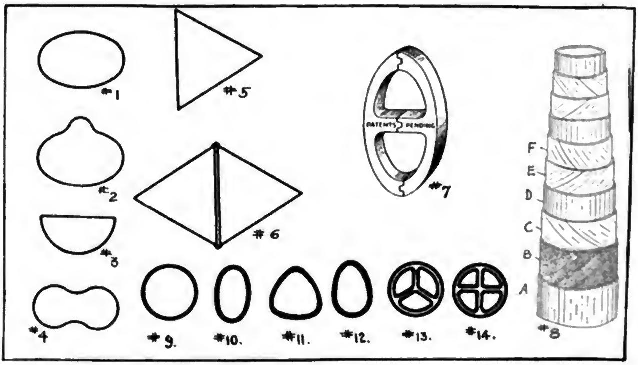
By O. Ursinus, C. E.

IN USELESS flying machine constructions, or other, some little item will be found which may be turned to good account by the experienced hand. Wood is used principally thus far in building aeroplanes, though very recently some structures both in America and abroad have been built of steel tubing. The advantage of wood is its light weight, great strength and easy-working qualities.

Lately some efforts have been made to improve on solid wood construction, by using wooden tubes, for instance. In Boston a hollow spar (Fig. 7) is being made and put on the market.

A man by the name of Wolf, in Germany, has invented a process for making wooden tubes of various cross-sections. This wood tubing consists of veneers 5 mm. thick, glued together. This method was described recently in *Flugsport,* an esteemed German contemporary. The grain of the veneer (A) runs in the direction of the axis; B is diagonally laid linen. C, D, E and F are veneers with counter-crossing grain. These constructions possess enormous firmness, as the following table will show:

No.	Diameter in Millimeters	Thickness of Wall in Millimeters	Weight for Running Meter in Grams	Pressure Resistance in Kilograms	Limit of Flexibility in Kilograms	Power to Resist Crushing Kilograms
1	20	4	225	150	70	85
1	25	4	275	200	85	105
1	32	4	410	300	130	145
1	45	4	530	500	200	230
1	55	8	1280	1000	500	530
2	36-16	4	290	250	120	135
4	36	4	375	300	135	145



The Wolf patented tubes may be made in any cross-section. Planes or whole bodies can be made from these veneers.

Steel tubing of various shapes has also been produced, as shown in Figs. 1 to 6. Figs. 3 and 4 are used for constructing ribs. Fig. 5 is used for body work, and may be used double or treble, as shown in Fig. 6.

Aeronautics in the Far East.

James W. Price, of California, who is traveling with a balloon, airship, hot air balloon, parachutes, etc., in the Far East, reports that the art is still in a somewhat backward state. In Hong Kong he made a balloon ascension in the presence of 15,000 people. From there he went to Medan in Sumatra, where he intended to make an ascent with his airship at the invitation of the "so-called" Medan Aero Club, but the club could not get together the necessary 4,000 guilders (about $1,600) to pay for the inflation. Sulphuric acid cost 6c. a pound and iron filings 3c., which is of interest to our own airship people. So the Medan Aero Club had to be contented with a hot air ascension. Subsequently he made a hot air trip for H. H. the Sultan of Lang Kat. From here his route lay through Penang, S. S., the Federated Malay States, Singapore and Java, where airship trips will be made.

THE ETEVE AUTOMATIC STABILIZER

TRANSLATED FROM "L'AEROPHILE."

By D. R. Hobart.

A NUMBER of investigations in the attempt to attain automatic longitudinal stabilization in aeroplanes have been made up to the present time, but one has been carried out on a machine in full flight. A public experiment made in this direction consisted of trials made at the military aviation grounds at Satory, near Versailles, France, under the direction of Captain Eteve, of the Sapper-Balloonist battalion, the aeroplane used being a Wright, with the addition of automatic stabilizers after the designs of the captain, constructed in the workshops of the Military Aeronautical Laboratory at Chalons-Meudon.

The first arrangement tried out at Satory was composed of two planes, *A* and *B*, movable on their axis *EE*. The axis *EE* is carried by a framework *C*, 3.5 meters in length, attached to the rear transverse members of the aeroplane surfaces. A horizontal vane *D*, movable on an axis *F* is connected to the planes *AB* by rods *KJ* and *KL*. The axis of the vane is firmly fixed to a tube *H*, controlled by a rod *MI* through a bell-crank *MHF*, this rod being in turn operated by a lever manœuvered by the pilot.

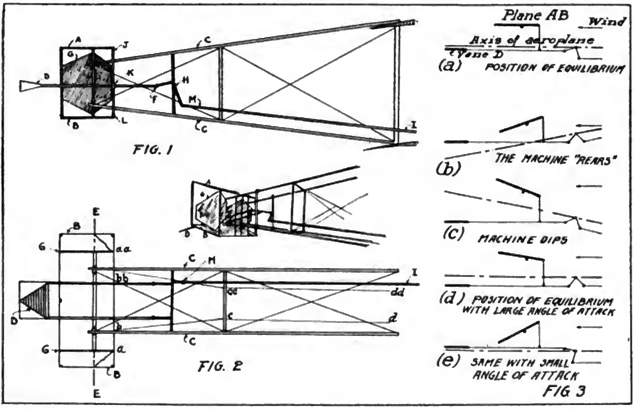


FIG. 1

FIG. 2

(a) POSITION OF EQUILIBRIUM

(b) THE MACHINE "REARS"

(c) MACHINE DIPS

(d) POSITION OF EQUILIBRIUM WITH LARGE ANGLE OF ATTACK

(e) SAME WITH SMALL ANGLE OF ATTACK

FIG 3

When the lever is fixed, axis *F* is immovable and the stabilizer vane struck by the wind, moves sensibly in the belt or layer of wind immobilizing the planes *AB*, which are compensated; the angle of attack of these planes is, then, invariable when the direction of the air current is constant. But when this latter varies, the movement of the vane is modified and the planes *AB* turn in a direction contrary to that of the vane.

In the "rearing" *(cabrage)* of an apparatus fitted with the stabilizer, the vane *D* is tilted and causes the planes *AB*, to turn in a direction contrary to their proper movement. This tends to correct or straighten out the aeroplane; when it plunges, the reverse effect is produced and the manœuvre is executed without interference, owing to the simplicity of the mechanism, a quality indispensable to an automatic stabilizer.

The planes *AB*, considered as depression rudders, automatically partake of the same movements as those resulting from the manœuvre made by the pilot of the aeroplane; moreover, the vane has the advantage over the aviator of acting simultaneously with the cause that produces the disturbance of equilibrium. In a word, the Eteve stabilizer opposes all variations of the angle of attack of the aeroplane as would be the case if a very long, light and instantaneously-acting empennage were fitted.

Under certain circumstances, it is necessary to be able to vary the magnitude of the angle of attack of the aeroplane, as when the inclination of the trajectory is to be modified, for example. To preserve the automatic action of the stabilizer, prior to, during and after the manœuvre effected by the pilot, the axis *F* of the vane can be raised or lowered by the aid of a lever under the control of the aviator. All displacement of *F* involves a change of equilibrium of the vane and consequently a modification of the angle of attack of the planes *AB* (Fig. 3, d and e). This indirect control of the stabilizer offers the great advantage of rendering the vane sensitive to exterior influences; the apparatus playing the role of depression rudder and stabilizer at the same time.

As will be seen from the figures, the rear vertical rudder of the Wright machine has been removed and replaced by two hexagonal planes *GG*, borne by the stabilizer framework and controlled by the spring-returned cables *a*, *b*, *c*, *d*, and *aa* *bb* *cc*, *dd* (Fig. 2). Wheels with spring shock-absorbers are fitted to the skids of the aeroplane.

When fitted to the aeroplane, the weight of the entire stabilizer "tail" is 25 kilogrammes (60.5 pounds), the additional weight carried by the aeroplane being 12 kilogrammes (26.4 pounds). The total surface of the stabilizer planes is four square metres (43 sq. ft.), half of the surface of the depression rudder of the Wright aeroplane, consequently if the stabilizer planes are rigid and will be as equally unstable as a Wright aeroplane when one of the two surfaces of the forward rudder have been removed. The flights at Satory have demonstrated in a complete manner, the important role played by the stabilizer.

(*Continued on page 188*).

THE PRESSEY AUTOMATIC CONTROL

A SYSTEM for automatically maintaining the equilibrium of an aeroplane has been patented by Dr. B. J. Pressey, of Newport News, Va., in several foreign countries, and patents are pending in others as well as in the United States.

In the patent drawings reproduced herewith the device has been fitted to a biplane using ailerons for lateral, and horizontal rudders for longitudinal, stability. The system is designed to be adapted to any type of aeroplane.

The aeroplane is equipped with a manually operated, vertical rudder, 3, at the stern, and a horizontal, manually operated, front control, 4, in front. At the ends of the main plane, and about midway between the upper and lower sections thereof, there are supplemental planes, 5.

In connection with these supplemental planes 5, there is employed a gravity influenced weight, the aviator in his seat, for holding them in a horizontal, or substantially horizontal, position when the main plane is traveling on an even keel; and for causing them to tip when the main plane dips laterally, to port or starboard, the planes 5 having a lifting effect upon the depressed end of the main plane, and a depressing effect upon the lifted end of the main plane, so as to correct such lateral dip of the main plane, and restore it to an even keel.

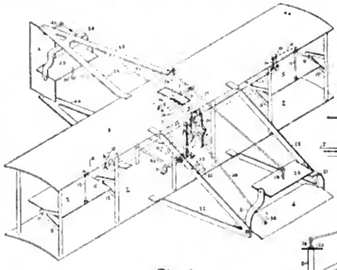


Fig 1

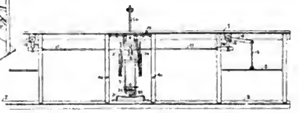


Fig 2

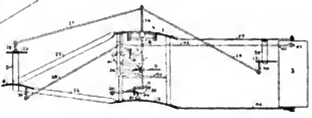


Fig 3

The Pressey Automatic Control

The aviator's seat, 6, is carried by yoke 7, suspended from a fore and aft shaft, 8, the latter being pivotally mounted in bearings at ends of bar 9 which is secured to a transverse shaft, 10, pivotally mounted at its ends in suitable bearings attached to the main plane 1, thus providing a gimbal joint, which permits free tipping movement of the main plane in any direction, in respect to said seat; the seat having a normal tendency to hang vertically, by reason of the effect of gravitation upon the weight, represented by the seat and its occupant. Lateral tipping of the main plane is caused, to effect corrective movement of the balancing planes 5, in the following manner: Each of the balancing planes 5, is pivotally supported, somewhat forward of the centre by bearings 11 located in bracketed arms 12, which arms are rigidly connected with uprights, which connect the upper and lower sections of the main plane.

To the forward, upper edge of planes 5, connection is made by means of rod 13, to one arm of a bell-crank lever, 14, the latter being pivotally mounted upon a fore and aft pin 15, supported from the main plane; and the other arms of the port and starboard bell-crank levers 16, are connected by rod 17, which has an eye 18, for receiving the segmental rod 19, secured to and projecting from cross bar on seat supporting yoke 7. When therefore, the main plane tips downwardly on the starboard side, the rod 17 will be moved bodily to starboard, and the starboard balancing plane 5, will be inclined so as to raise its forward edge and depress its rear edge, while, at the same time, the port balancing plane 5, will be inclined so as to depress its forward edge, and raise its rear edge, thereby causing the starboard balancing plane to exert a lifting effect, and the port balancing plane to exert a depressing effect upon the main plane, with the result of restoring the main plane to an even keel, at which time the balancing planes, 5, will have resumed their normal, horizontal position.

When the main plane dips downwardly on the port side, a reverse action takes place, with the like result of restoring the main plane to an even keel. In order to correct forward and aft dip of the main plane, fore and aft balancing planes, 20 and 23 are provided. These planes are carried by transverse rock shafts, which may be pivotally mounted in any suitable way, upon structures carried by main plane. In the present instance, the forward balancing plane is pivotally mounted in extensions 21 of the frame 22 which carries the forward, manually operated, horizontal ascending and descending plane 4.

The aft balancing plane 23 is pivotally mounted in extensions 24 from frame 25 which carries the vertical steering plane 3. Projecting upward from bar 9 is an arm 26, which is connected by rod 27 to an arm 28 projecting upwardly from forward balancing plane 20 and by rod 29 to an arm 30, projecting downwardly from aft balancing plane 23.

When, therefore, there is a downward tip of the forward part of the main plane, retention of its vertical position by the arm 26 will cause the forward balancing plane, 20 to tip so as to raise its forward edge and depress its after edge; while at the same time the after balancing plane, 23, will tip so as to depress its forward edge and raise its after edge, with the result that there will be a lifting effect on the fore part of the main plane, and a depressing effect on the after part of the main plane, which will restore said main plane to an even keel. A reverse action takes place when the after part of main plane has a tendency to dip. In case the aeroplane departs from an even keel, and dips for instance, forwardly and to one side, all four balancing planes would immediately be brought into action.

In ascending and descending, however, departures from the normal inclinations of the main plane are necessary and in order that the forward and aft balancing planes 20 and 23 shall not interfere with voluntary descent or ascent, the aviator's seat should, in making such ascent or descent, virtually be locked to the main plane, so far as allowing forward and aft motion of seat.

To secure this result, there is employed what may be termed a sliding-bar 31, firmly secured to lower section of main plane and parallel to the lateral swing of the aviator's seat. To the ordinary foot rest 32, connected with the aviator's seat, a supplementary foot rest 33, is hinged and this supplementary foot rest carries an extension which ends in a lug 34, which lug normally swings just above and free of the sliding-bar 31, being held in this position by a light spring 35.

In case the aviator wishes to ascend, he places his foot upon the supplementary foot rest; the weight of the foot overcomes the force of the spring and allows the lug to be carried down and in front of the sliding bar, thus rendering neutral for the time being the forward and aft balancing planes. During such time, the forward and aft balance would be under the operator's control by means of the manually operated plane 4. In case of voluntary descent the lug 34 is dropped behind bar 31, until such voluntary descent is ended.

It is absolutely necessary, in making a turn with an aeroplane, if that turn is to be made in safety, that the main plane shall be inclined or "banked," to a degree proportional to the radius of the curve and to the speed of the aeroplane. Each different curve, at the same speed, demands a different inclination, as is also demanded by each variation in speed in rounding like curves. This invention is expected to give the desired result with absolute certainty.

If the aviator desires to make a turn to the right, he would first manipulate the vertical rudder 3, by means of lever 36. The aeroplane would begin to make the turn.

At this instant, centrifugal force would come into action and cause the aviator, in his seat, to swing outwardly to an extent just in proportion to the radius of the curve, and the speed of the aeroplane. The outward swing of the aviator's seat causes the port balancing plane 5, to be so inclined as to present its under surface to the air pressure, whereas the upper surface of the starboard plane is presented. This would immediately cause an inclination of the main plane to the degree where said main plane would be at right angles to the suspended weight, the aviator in his seat, thus allowing this special curve, at this particular speed, to be negotiated with safety.

If it is desired to make a curve of less radius or at a greater speed, centrifugal force, acting upon the suspended aviator's seat, will cause it to swing out to a correspondingly greater extent, thereby causing the main plane to be banked to a greater degree.

LETTER TO AERO CLUB MEMBERS

THE following letter was received just before going to press. AERONAUTICS will gladly devote such space in subsequent issues as may be required for letters of suggestion or aid in co-operating with other members for a betterment of conditions in the Club, and for the making of it a more serviceable institution.—*The Editor.*

New York, Oct. 15, 1910.

To the Members of The Aero Club of America:

The article which appeared in to-day's papers stating the view expressed by Mr. Moissant, who declares that this country is far behind France in Aeronautics, is so eminently well founded upon fact that it naturally causes one interested in the advancement of the art in this country to pause and think. It appears that hundreds of aeroplanes have been made and sold as well as hundreds of pilots' licenses issued in France. Can it be that there are so many of those things which have been done which should have been left undone and so many of those things which have been left undone which should have been done in the short history of American aeronautics that we are at last forced to the realization of our own shortcomings by the advanced condition of aeronautical affairs in France?

Concerted effort is naturally dependent for success upon proper organization. The real head of the art, the Federation Aeronautique Internationale, is recognized in France through the Aero Club of France, and is recognized in the United States through the Aero Club of America. This seems to put it up to the Aero Club of America to explain why they cannot accomplish as much with American genius and capital as has been accomplished with Frenchmen under the same system of operation. In the solution of the problem the following questions arise:

Can it be that the form of government of the Aero Club of America is too autocratic to be compatible with the democratic spirit of our American institutions?

Why is it that the Aero Club of America never holds regular meetings for enabling its members to get better acquainted and to co-operate?

Is the International Aviation Meet to be held at Belmont Park under the auspices of the Aero Club of America; and if so, why is it the members have not been enlisted or consulted?

Why does the Aero Club of America not own and control its property directly instead of through the Aero Corporation, which is governed by the same five men who originally owned and controlled all the property of the Club to the exclusion of the members?

Why did the Aero Club of America assume the responsibility of entering into such an important contract as that which was made with the Wright Company considering that it might have seriously checked progress in the art of aviation, without first consulting the members?

Why has a democratic National Organization of Clubs not been encouraged?

Why have the members not been invited to take part in Club affairs?

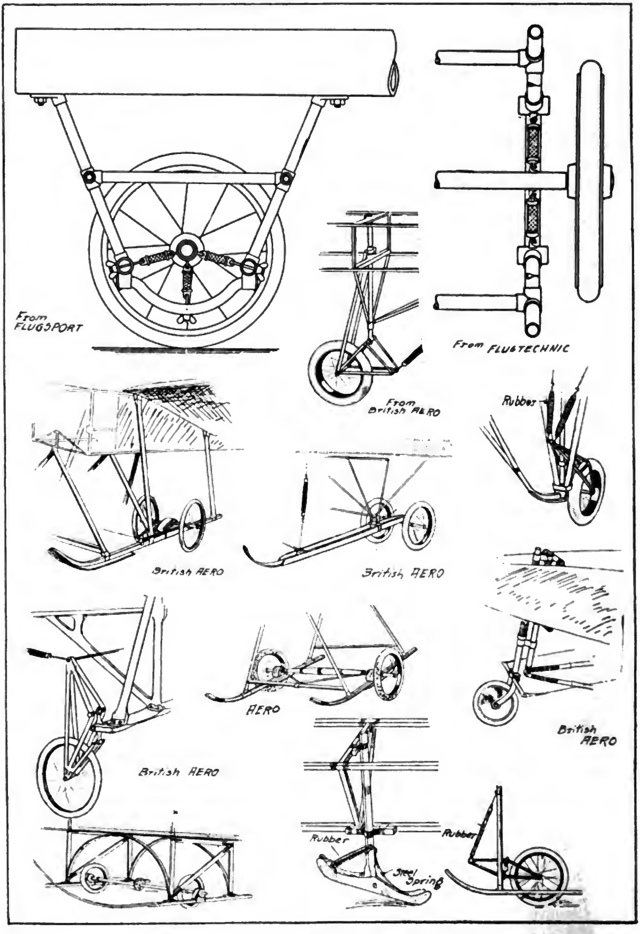
I take this means of reaching the members of the Aero Club of America as there seems to be no other way of bringing these vital points before them.

Yours respectfully,

LOUIS R. ADAMS.

Dr. Luzern Custer, of Dayton, O., has presented Leo Stevens with one of his new design statoscopes, which Dr. Custer described and illustrated in a recent issue of AERONAUTICS. The article of Dr. Custer was translated and printed later in one of the German aero magazines. Stevens used this on the first occasion and pronounced it the finest instrument of its kind yet invented. Clifford B. Harmon also tried it and with great success.

CONSTRUCTION AIDS AND DIGEST, XVI.



THE MISSING LINK IN AERONAUTICS

By John D. Pursell.

PUBLICATIONS which, a short time ago, searched the dictionary for conservative words, when they touched on aeronautics, now give full play to their imaginations, and seldom fail to work in something like this: "We have the aeroplane now only in its infancy. One may be sure that improvements will be made in the machine such as are not now dreamed of," etc., etc. However, they never commit the indiscretion of naming any general lines along which this miraculous development will take place. The modest purpose of this article is to point out precisely that opportunity for development. The facts will speak for themselves.

It seems almost incredible, but it is, nevertheless, true that some very homely and everyday laws of Mother Nature have been studiously ignored by the elect, like the ugly duckling, because things have prospered very well, so far, without them. I refer to Inertia, that property of all ponderable bodies (including air); and its accompanying factor, Accelerating Velocity. These two potent influences are destined to play a very important part in the development of all aerocars—helicoptere and flapping-wing devices, as well as the aeroplane. Consideration for your patience constrains me to limit my comments to the aeroplane, alone.

Does the present aeroplane exhibit that graceful impression of reserve strength that stands forth so strongly when a touring car purrs lazily over a small hill? Verily, I trow not. Rather let us think of a seven passenger car, equipped with a bicycle motor, nearly stalled on the car tracks in front of a rapidly moving street car. Where is the exhibition of magnificent reserve power for emergencies? I submit that the mental attitude of the driver in either case is very similar. They both must win out by virtue of personal skill alone.

Suppose for a moment that the 50-horsepower Curtiss bi-plane required but one horsepower in level flight. Wouldn't this solve all the essential problems of safety, reliability and commercial usefulness simply because of the tremendous, fifty-nine hundred per cent. reserve power absolutely under the operator's finger? The mastery of adverse elements would be unutterably simplified. This is not an idle supposition. It is advanced merely to illustrate graphically the truly marvelous advance which will accrue from any considerable economy in horsepower consumption over the present figures.

The most efficient aeroplane of to-day carries about 50 pounds for every horsepower actually delivered at the propeller. A 25-pound bird, however, instead of expending half a horsepower, exerts scarcely a tithe of that energy. Let us investigate this discrepancy.

Motors have reached practical perfection, as far as small weight per horsepower is concerned. Lighter motors cannot be expected to exhibit the reliability so vital to the successful aeroplane. Instead of crowding the motors, let us look rather to tho sustaining planes and see why they are so inefficient when compared with their prototypes in nature.

In the standard plane of to-day, the approximate angle of incidence is about 6 degrees. At 6 degrees, the drift or head resistance developed during flight (exclusive of framing, etc.) is about one-tenth of the total weight carried. To be exact, for every 206 pounds lifted, there are 21.7 pounds of drift, which, multiplied by speed of the machine, and figuring an allowance for loss in transmission, etc., represents the horsepower required to carry the 206 pounds. It is perfectly clear that if we can design a sustainer capable of producing the necessary lift, with speed and wing area remaining the same, at only a fraction of 6 degrees angle of attack, we will need only a fraction of the horsepower now required to carry the weight with planes set at 6 degrees.

Such a sustainer is described below:

In the first place, the vitally important factor, that which every flying creature employs to sustain itself, rarefaction over wings, body and tail, is almost totally disregarded in the present design. (This does not appear quite consistent in view of the general acceptance of the fact that there is rarefaction over the tops of aeroplane surfaces.—Editor.) A study of the transverse vertical section of a bird's wing will show that defective pressure must exist during flight, over a large portion of its upper surface, after a certain forward velocity is attained. The wing moves edgewise through the air, and the air passes parallel with the under wing surface. The air stream divides at the thick front edge of the wing, and the portion of the air stream represented by the thickness of the wing, is deflected upward and over the upper surface by the wing's curved forward section, the extreme forward edge of which is nearly on the same plane as the under surface of the wing. This air thrown upward by the wing's curved edge, cannot reverse instantly and maintain close contact with the upper surface of the wing, on account of its inertia. The air pressure, therefore, drops below atmospheric, between the passing current of air and the wing's upper surface, the space between being filled by eddies at a pressure below that existing in the free air (to be found underneath the wing) the degree of rarefaction depending on the speed and the degree of their inclination to each other. This, of course, somewhat resembles the "slip" of a propeller.

How slight the degree of rarefaction required for flight is at once apparent when we remember that we require only two to four pounds lift per square foot, whereas an absolute vacuum, were it possible to obtain it, would yield about one ton to every square foot of surface.

A satisfactory demonstration of the importance of defective pressure may be obtained by taking an ordinary box kite and removing the vertical planes, thus allowing the outer air to be drawn into the rarification forming over the lower planes. The loss in lifting power of the kite will be apparent. On the other hand, by extending the vertical keels a slight distance above the upper horizontal planes, thus protecting the rarification forming over the upper planes, from any side currents, the increase in lifting power of the kite will be noticeable.

In the face of the above, we must agree that proper conservation of the rarification above a sustainer is essential to economy of energy in flight.

Now we come to a factor in the proposition, which seems to have been ignored heretofore, viz: The efficiency of a sustainer varies inversely as the fore-and-aft dimension.

Referring to diagram: The dotted curve 2 3 represents the line of equal rarefaction, produced by the air stream in flowing over the wing 4. The space 5 indicates the useful rarefaction, which corresponds somewhat to the "slip" of a propeller. This line 2 3, must represent an increasing downward velocity, because air possesses weight, and consequently, inertia. This is self-evident. As this is an accelerating downward velocity, the distance 6 7 must be only one-sixteenth of the distance 8 9 because it is one-fourth as far back from the front edge of the wing. If the accelerating velocity factor is admitted (and it cannot well be denied) the distances 6 7 and 8 9 must compare as the squares of their distance back from the front wing edge.

The expansive power of air affects the rate of acceleration, but it has nothing to do with the ratio, and it is the ratio with which we are dealing.

The distance 8 9, being sixteen times as great as the distance 6 7, the average angle of incidence for the large wing is four times that re-

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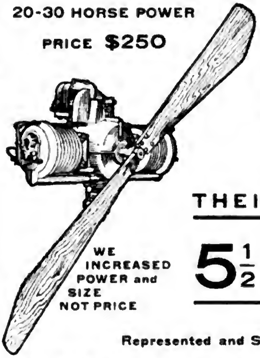

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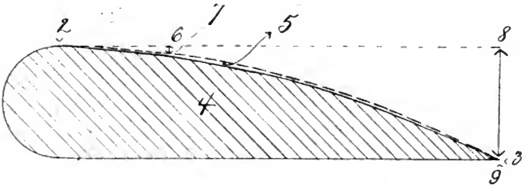
quired by a quadruplane, consisting of four planes measuring the same as 2 7, superimposed. Though the distance 8 9 is sixteen times the distance 6 7, the radius of its arc 2 8 is, of course, four times the radius 2 6, hence the *degree* of incidence is not sixteen times as great, but only four times.

Inasmuch as the efficient angle of incidence for the quadruplane is only one-fourth the angle required by the monoplane, it will lift an equal weight, at same speed, but requires only one-fourth as much horsepower as the large monoplane.

Reference to the diagram will show that an octoplane would yield eight times the efficiency—requiring but one-eighth the horsepower to perfrom the work, etc., etc.

Therefore: Efficiency of a sustainer varies inversely as the fore-and-aft dimension.



Or: The angle of incidence varies directly as the fore-and-aft dimension of a sustainer.

Also: A number of corollaries, but they are so obvious that I will not take space to set them forth. One would deal with Prof. Langley's paradox (?) of economical high speeds. That is, a plane driven at quadruple speed requires only one-fourth the angle of incidence (we see why from above diagram), therefore developing four times the speed at no additional expense in horsepower.

In other words, there is an intrinsic advantage derived from the narrow planes—and no apparent disadvantages—even constructional, for stronger machines may be built by reason of their cellular compactness.

Constructional limitations will discourage the use of planes much under 6 inches deep. Compared with the present 6 foot deep planes, these sustainers will require but one horsepower for every twelve in the present machines—quite a saving, we must admit. The 206 pounds mentioned above, would be levitated with only 1.8 pounds head resistance, instead of the 21.7 pounds required with the larger plane. And this, too, with no increase in wing area or speed. This means we can figure about 600 pounds carrying capacity to each horsepower which opens up vast possibilities in the commercial machine.

As an angle of incidence equal to but one-twelfth of the original 6 degrees—namely, one-half degree—would prove impractical with the present form of aerocurve, we substitute the natural design found in a bird's wing. The flat lower side is to pass parallel with the lower air stream; the thick forward edge divides the two air currents, and the sloping upper surface corresponds to the angle of incidence, yielding the lift, through rarifaction and minus pressure. And it is this minus pressure that does the work, anyway. This thick wing cannot be taken aback at the front edge, when held at small angles, like the present aerocurve would be.

A multiplane possesses intrinsic fore-and-aft stability. By designing the "vertical" bracing like the sustainers, and arranging them at dihedral angles, we may practically eliminate idle head resistance in the wings, and the lateral stability will also be automatically increased.

With moderate application of the proposition: "Efficiency varies inversely as the fore-and-aft wing dimension," and its corollaries; together with proper conservation of the rarification above a wing, we usher in the era of true flight. The commercial flying-machine is now a probability. Excelsior!

Aero Calendar of the United States.

Oct. 17.—St. Louis, Mo., Gordon Bennett balloon race.
Oct. 22-23.—Ft. Wayne, Ind., 2 Curtiss machines.
Oct. 22-30—Belmont Park, L. I., international aviation meet, including Gordon Bennett aviation race, latter on Oct. 29.
Oct. 22-23— Novice meet of A. C. of California.
Oct. 28-Nov. 1—Macon, Ga., Wright aviators.
Nov. 1-3— Norfolk, Va., 3 Curtiss machines.
Nov. 2-8—Baltimore, Md., open meet.
Nov. 2-12—Philadelphia, Pa., aero show of Pennsylvania A. C.
Nov. 17-24—St. Louis, Mo., Coliseum aero show.
Dec. 1-8—Aero Show of A. C. of Illinois.
——— —Streator, Ill., Chas. F. Willard.
——— — Mobile, Ala., Curtiss aviator.

Chattanooga Wants Meet.

The Chamber of Commerce, of Chattanooga, Tenn., is desirous of communicating with aviators for the organization of a meet or exhibition. Correspondence is solicited.

$32,700 For Baltimore Flights.

Baltimore has arranged for an aviation meet Nov. 2 to 8.

The aviation committee has arranged the tentative list of prizes as follows: Lord Baltimore prize, $10,000; greatest speed, $5,000; altitude, $5,000; duration of flight, $3,500; longest distance flown, $3,500; slowest flight, $1,500; get-away, $200; accuracy, $500; bomb throwing, $3,500; a total of $32,700. In addition to these, prizes will be offered for amateurs, while J. Barry Ryan has offered the Commodore Barry Cup for bomb throwing, this to be open only to members of the Aeronautic Reserve and foreigners.

Dinner to Curtiss.

The best aeronautical dinner that has yet been given was tendered Glenn H. Curtiss and his flyers, J. S. Mars and J. A. D. McCurdy by the Aero Club of Cleveland (O.), on October 12. Forty-three people attended the banquet, including the Mayor of Cleveland, president of Chamber of Commerce, and other leading men. E. W. Roberts, of the Roberts Motor Co., was one of the speakers.

BELMONT INTERNATIONAL MEET.

As we go to press the arrangements are about completed for what promises to be the most extraordinary meeting yet held in America. The "International Aviation Tournament" at Belmont Park, Long Island, New York, from Oct. 22 to 30, inclusive, offers total cash prizes amounting to $67,300, to be competed for under the rules and regulations of the Federation Aeronautique Interaationale.

The Gordon Bennett race, perhaps, is the principal feature of the meet and is the primary cause of its being held. A year ago, Aug. 28, G. H. Curtiss won the cup at Rheims, France, making the fastest time for 20 kilometres, 15 minutes 50 3/5 seconds, a speed of 47.06 m. p. h.

In the 1910 Gordon Bennett cup race, Oct. 29, $5,000 cash goes to the winning aviator (and the silver trophy to the club of the country represented by him) making the fastest time for 100 kilometres (62.1 miles) flown over a course of 5 kilometres (3.1 miles).

LIST OF ALL CONTESTS.

RYAN PRIZE, $10,000. Donated by Thomas F. Ryan, to be awarded to the aviator who shall make the best elapsed time in a flight starting at Belmont Park, around the Statue of Liberty, in New York Harbor, and return to the starting line; open to all competitors who shall have remained in the air in one continuous flight one hour or more, during the previous contests of the tournament. This contest is scheduled for Thursday afternoon, October 27.

GORDON BENNETT ELIMINATION RACE, first, $1,200; second, $800; third, $500; total, $2,500. To select representatives of America in the Gordon Bennett race. Open only to aviators having pilot licenses. Distance 100 kilometers, over circuit of 5 kilometers. Three machines making fastest speed to represent America.

HOURLY DISTANCE PRIZE, first, $250; second, $100; third, $50; for each one of 12 hours, total, $4,800. One hour set apart each day for hourly distance and altitude contests.

HOURLY ALTITUDE PRIZE, first, $250; second, $100; third, $50; for each of 12 hours, total, $4,800.

DAILY TOTALIZATION OF DURATION PRIZE, first, $500; second, $250; third, $100; for each of seven days, total, $5,950.

FASTEST FLIGHT FOR TEN KILOMETERS, first, $1,500; second, $1,000; third, $500; total, $3,000. Over four laps of 2,500-metre course.

GRAND ALTITUDE PRIZE, first $2,000; second, $1,000; third, $500; fourth, $250; total, $3,750. $1,000 additional for world's record.

AERO CLUB OF AMERICA ALTITUDE PRIZE, $5,000. Altitude must be 10,000 feet or more.

GRAND SPEED PRIZE, first, $3,000; second, $1,000; third, $500; total, $4,500. Distance, 25 kilometers (10 laps).

CROSS COUNTRY FLIGHT, first, $500; second, $250; third, $100; on each of four days, total, $3,400, awarded for best speed.

CROSS COUNTRY PASSENGER CARRYING PRIZE, $2,000. Awarded for best speed with passenger weighing not less than 125 lbs.

PASSENGER CARRYING PRIZE, first, $1,000; second, $400; third, $200; total $1,600, to be awarded to aviator carrying greatest weight of passengers twice around 2,500-metre course.

TOTALIZATION OF DURATION PRIZE, first, $3,000; second, $1,500; third, $1,000; fourth, $500; total, $6,000. Awarded for greatest total duration during meet.

TOTALIZATION OF DISTANCE PRIZE, first, $1,500; and second, $1,000; third $500; total $3,000. For greatest total distance during meet.

MECHANICS PRIZE, $1,000.

DISTRIBUTION OF PROFITS. Aviators participate to the extent of 70 per cent. of the first $100,000 profits, and 40 per cent. of any sums beyond; the aviators sharing this on a system of points.

OTHER PRIZES. *Scientific American* trophy for the longest flight made in 1910 in America. *Michelin* trophy and $4,000 cash for the longest flight in a closed circle during the year. It is necessary to exceed 244 miles made by Olieslagers at Rheims last July. Silver cup, value $1,000, to the *amateur* whose total duration for flights during meet shall be greatest providing it exceeds five hours.

ENTRIES.

France—Count Jacques de Lesseps (Bleriot), Alfred Leblanc (Bleriot), Hubert Latham (100 h. p. Antoinette), Rene Barrier (Bleriot), Emile Aubrun (Bleriot), Rene Simon (Bleriot), Roland Garros (Clement-Bayard Demoiselle), C. Audemars (Nieuport).

England—C. Grahame White (Farman and Bleriot), James Radley (Bleriot), Alec Ogilvie (Wright).

America—Ralph Johnstone (Wright), Walter Brookins (Wright), Arch Hoxsey (Wright), Chas. K. Hamilton (Hamilton), Capt. T. S. Baldwin (Baldwin), Tod Shriver (Shriver), John B. Moissant (Bleriot), J. A. Drexel (Bleriot), C. B. Harmon (Farman), H. S. Harkness (Antoinette), C. F. Willard (Curtiss), J. C. Mars (Curtiss), J. A. D. McCurdy (Curtiss), Eugene Ely (Curtiss).

The majority of the Bleriots are fitted with 50 h. p. Gnomes. Barrier is bringing over the 100 h. p. Gnome-engined Bleriot used recently by Morane in making his world speed record of 66.18 miles an hour. Hamilton has a 110 h. p. engine.

Curtiss has built a new engine of 64.8 h. p. (A. L. A. M.) and there are some new machines at Hammondsport.

The Wright Company is known to have a fast machine. Ogilvie has been at Dayton for sometime practicing on a Wright.

All are monoplanes except the Farman, Wright, Hamilton, Baldwin, Shriver and the Curtiss machines, if any are entered.

Five Wright machines are promised for the meet from the Wright Company. Three are sure of being present.

Garros is a new aviator. His first notable flight was on Sept. 9, when he flew some distance across country; with another of 45 kil. on the next day.

GORDON BENNETT ELIMINATION.

Entries for this made to date, October 14, include Hamilton, Moissant, Drexel, one Wright machine, Harmon, Baldwin, and Harkness.

In the Gordon Bennett race, Leblanc, Latham and one yet to be named, possibly Simon, will fly for France. England has named White, Radley and McArdle (Bleriot).

Trial flights of the Latham 100 h. p. Antoinette showed up a speed of 69.5 miles an hour.

THE FIELD.

On the flying field, with its two miles of grassy level, 14 gayly colored pylons trace the aerial course. Starting in front of the Grand Stand the flying gladiators will give a near view of their airmanship. Each aviator has his distinctive style of launching and alighting. The machines, after turning the last pylon, will approach the grand stand at a speed of a mile a minute, increasing this as they sweep past the crowds.

A brilliant period of preliminary flying will occupy the three or four days before the Tournament. The hangars, or sheds, in which the racing monoplanes and biplanes will be housed, have been finished. Aviators have begun "tuning up," trying out motors and testing the stability of their craft, in the air. Three-quarters of a mile across the green flying field, the 30 hangars and repair shops are lively with corps of expect mechanics, who will live there during the entire flying season. "These stables" have already become a center of interest for hundreds of experts on flying.

The cross-country flights will be out and around captive balloons furnished by Leo Stevens.

COST OF SEEING THE SHOW.

A number of boxes and parking spaces are reserved for members of the Aero Club of America and tickets for the same can be obtained of the Aero Corporation, Ltd., Room 1101, Fifth Avenue Building, New York, at the following prices: Boxes seating six or eight are $30.00 and $40.00 respectively per day. Club-house badges with full privileges of the house and grounds with one lady guest, are $50.00 for the entire meet. Reserved seats, $2.50 per day; admission to grand stand $2.00; admission to field stand, $1.00. Parking spaces $5.00 per day and $2.00 per person, including chauffeur.

Curtiss Machine in Gordon Bennett.

New York, Oct. 17, 1910.—It is now definite that there will be a Curtiss aeroplane in the Gordon Bennett race. This will be a single surface machine, with a new 8-cylinder engine. G. H. Curtiss will not fly the machine himself. Curtiss has the privilege of defending the cup without entering into the elimination trials, but as he will not fly the machine it is indefinite whether the aviators who do fly it will be permitted to go into the race without going through the trials. There will be at least two other Curtiss machines of regular type. Willard, Mars, McCurdy and Ely have all been entered.

EXHIBITION FLIGHTS OVER THE COUNTRY

SPRINGFIELD, Mass., Sept. 17.—Louis G. Erickson, of Springfield, Mass., made several flights at the Sturbridge Fair on Sept. 17, in his Curtiss type machine. Four short flights were made across the field of the race track. The condition of the field was horrible, with a pond, a swamp and lumpy grounds to run over. The flights were made with a propeller, which had a piece knocked out of it by a wrench which dropped into it while in motion.

KNOXVILLE, Tenn., Sept. 22-28.—P. O. Parmelee, one of the new Wright aviators, flew at least twice every day at the Appalachian Exposition.

DETROIT, Sep. 19-25.—Hoxsey and Johnstone flew their Wright machines every day according to the schedule.

Chas. J. Strobel had a dirigible there. Parmelee was a great success as a flier. Some of his flights lasted 30 minutes, and in all of them he indulged in "roller coasting" and other stunts.

ALLENTOWN, Pa., Sept. 20-24.—G. H. Curtiss and J. A. D. McCurdy were scheduled to fly. On account of the dangerous grounds Curtiss refused to allow McCurdy to fly. Curtiss flew over part of the town. It was advertised that he would fly to Philadelphia. The only possible route, without going over the mountains, was full of dangers and 120 miles in length, so the flight was given up.

OLEAN, N. Y., Sept. 22-23.—Chas. F. Willard (Curtiss) gave exhibition flights. In starting a flight, a piece was chipped out of his propeller, but bad ground made it necessary to keep going. The loss of blade surface on one side rocked the machine so that every wire was loose on landing.

TRENTON, N. J., Sept. 26-30.—Ralph Johnstone flew every day in accordance with his contract, meeting with the greatest enthusiasm on account of his wonderful control.

HELENA, Mont., Sept. 26-Oct. 1.—J. C. Mar's flights at Helena were very successful. The governor of the state presented him with a gold watch and nugget fob. Helena has an altitude of 4,100 feet. This is the highest that a Curtiss machine has flown, as far as known.

Mars essayed a flight across the Rocky Mountains for a prize offered by Ringling Bros., the circus men. After some hours searching parties found the dismantled machine near the top of the range. Fortunately, Mars escaped injury. The right hand plane, front wheel and propeller were smashed in alighting, but the machine was brought back. His altitude above sea level is reported to have been 7,500 feet, a new American record.

CHICAGO, Oct. 1-9.—Curtiss, Ely, Willard, McCurdy and Post were the flyers at an exhibition conducted by the Chicago *Post* on a profit-sharing basis. Willard and Curtiss both made fine flights. Willard made a sensational one over a part of the city and went to a height of 4,000 feet. He slowed up his motor and swooped down over Jackson Park, then up again to the grounds at Hawthorne track. Augustus Post did here his best flying to date. Two days of rain prevented flying.

ELY STARTS FOR NEW YORK—GOES BUT 19 MILES—ATTEMPT GIVEN UP ON ACCOUNT OF LACK OF TIME.

Eugene Ely, with the new 8-cyl. machine used by Curtiss at Boston, left on the 9th on an attempt to reach New York. After going about 12 miles at an altitude of 1,500 feet, the carburetor gave trouble and a landing had to be made at Beverly Hills.

This was fixed, the motor started and spectators helped to start the machine. In getting off the front wheel hit a hidden rock and smashed the wheel.

The next day, the 10th, he did not get off the field when the gasoline feed pipe broke and he landed in a brook, smashing the whole front construction. This was fixed in a hurry and he got going again and flew for 25 minutes. The motor went dead in the air and he glided down from a height of 2,000 feet. In landing he smashed the front control again, and the distance from the start was but 19 miles, at East Chicago. So much time had elapsed that it was not deemed advisable to try to continue.

Miss Blanche Scott made her debut with a Curtiss machine during the week.

The time limit of the prize offered by the New York *Times* and the Chicago *Post* is up on October 16. Present plans do not provide for keeping the offer open after that date.

SEDALIA, Mo., Oct. 1-7.—J. C. Turpin, the latest addition to the Wright staff of aviators made his first public flight at Sedalia on the 1st, and flew every day but one during the week.

SPRINGFIELD, Ill., Oct. 1-8.—Hoxsey took the machine Brookins used in his Chicago-Springfield flights and created great enthusiasm during the week. On the last day he made his great flight to St. Louis.

RICHMOND, Va., Oct. 3-8.—Ralph Johnstone filled the engagement successfully, rain preventing his flying on the 5th and 6th. A rather peculiar accident happened while flying on the 5th. The Mayor of Richmond, as passenger, in his enthusiasm in waving at the crowd struck the motor control with his arm and shut off the motor just as they were rising from the ground. Johnstone made a successful landing but broke a few spars, which were repaired on the following day.

SHRIVER HAD BAD SMASH.

WILMINGTON, Del., Oct. 4-7.—Tod Shriver and J. J. Frisbie filled this date. Frisbie made only some short flights. "Slim" Shriver made a magnificent flight on the 3d, over part of the town, and was up 15 minutes in a strong wind. He landed with the wind behind him, did not shut off the motor in time, he hit the ground, bounced, then landed nose on and the machine rolled over. He crawled out and the first thing he asked was, "Can you fix it up for to-morrow?" The doctor found a bone broken in his leg.

The machine is one built by himself, and is called the "Shriver-Dietz"; it is of the usual Curtiss type, but fitted with a 30-50 Kirkham motor of a weight of 288 pounds. Bosch high tension magneto, Livingston radiator, Shebler carbureter, propeller 6 ft. 6 in. by 3½ ft. pitch, which gives up to 340 pounds standing push at 1,360 r. p. m.

BIRMINGHAM, Ala., Oct. 6-12.—P. O. Parmelee, a Wright aviator gave an exhibition at the Alabama State Fair. The first day a flight was made in a drizzling rain; the second day there was no attempt at flying made on account of the wind being high.

KANSAS CITY, Mo., Oct. 7-8.—Capt. T. S. Baldwin and William Evans flew at Elm Ridge Park. One of the contests was a race between the two machines for $500, offered by the Kansas City *Post*.

Evans is a new-comer who recently bought a biplane from Dr. Wm. Greene of Rochester. He sprang into prominence by his sensational flights at Overland Park in his first trials, with a 40 h. p. Elbridge engine. His longest flight was one of about 28 miles across country.

William Evans of Kansas City

ST. LOUIS, Mo., Oct. 8-18.—Five Wright machines are flying daily at the meet of the St. Louis Aero Club, held in connection with the International balloon race on the 17th.

Ely filled the Roanoke, Va., date, Sept. 21-22. At Poughkeepsie, N. Y., Sept. 27-30. Ely raced an automobile and made good flights before the biggest crowd the fair has ever seen. Willard flew at Riverside, Mass., Sept. 28. George F. Russell exhibited at the Danbury, Conn., fair, Oct. 5. Mars was at Spokane, Wash., Oct. 3-8, and Ely at Youngstown, O., on Oct. 12.

Arch Hoxsey (Wright) flew at Rochester, N. H., Sept. 27-30.

Thousands attending the Washington (Pa.) centennial celebration, Oct. 3-7, stood speechless when Brookins made his high and sensational flights. About 1,000 feet up, in one of his flights, the machine was caught by a gust of wind. It dipped and plunged downward about 100 feet before it was righted. The aviator later landed safely.

HOXSEY AND BROOKINS SET NEW MARKS

BROOKINS MAKES NEW AMERICAN RECORDS.

175¾ Miles Across Country.

Total straight line distance from town to town............175¾ miles
Total flying time...........5 h. 51 m.
Average speed per hour....30.4 miles
Elapsed time, start to finish..7h. 12 m.
Left Wash. Park, Chicago..9:15 a. m.
Arrived Gilman, Ill., 75¼ m., 11.43 a.m.
Left Gilman, Ill............12:41 a. m.
Arrived Mt. Pulaski, Ill., 86½ m. ....3:20 p. m.
Left Mt. Pulaski, Ill.........3:43 p. m.
Arrived Fair Grounds, Springfield, Ill., 23¾ miles..........4.27 p. m.

Springfield, Ill., Sept. 29.—By going 86½ miles without alighting, Walter Brookins, in his Wright biplane (minus front control), broke the American record for cross-country flying, made by Charles K. Hamilton, who set the mark of 74.31 miles in the flight from New York to Philadelphia and back. Curtiss' longest cross-country flight was 71.25 miles, in his Albany-New York trip.

The aviator flew for the most part at an elevation of 800 to 1,000 feet, but occasionally dropped lower or mounted higher to fly in better air currents. The average wind for the 5 hours was 9½ miles an hour, head on.

BROOKINS MAKES TWO NEW RECORDS.

Not only did he make more miles in one stage of the trip, but the total distance flown is greater than either that made by Curtiss or Hamilton. The latter's flight to Philadelphia from New York, and return, totaled 149.54 miles, and Curtiss on his Albany-New York flight covered 142.5 miles.

The flight was made under the auspices of the Chicago *Record-Herald*, which offered a purse of $10,000.

The start was in Washington Park, Chicago. It had been arranged for Brookins to land at Gilman to replenish his oil and gasoline supply. Brookins waited at Gilman for 45 minutes before the accompanying train came in. Train started from Park Row Station, Chicago, at 10:02. A special car was attached, which was held when necessary.

An oil pump which didn't work caused a landing at Mt. Pulaski. This was repaired after a few minutes and the flight resumed. In starting, one of the wheels was wrenched off, but Brookins did not know it and kept on going. From here he left the line of the railroad and headed directly for the capital of Illinois. After circling above the Fair Grounds at a height of 2,000 feet, he shut off the motor and glided down, the deed planned successfully accomplished.

Wilbur Wright and the newspaper men followed the flier in a special car attached to a passenger train of the Illinois Central. This had to make its regular stops, which gave Brookins time to beat the train to both Gilman and Mt. Pulaski.

For the distances AERONAUTICS is indebted to Mr. Williams Welch, Chief Draughtsman of the Office of the Chief Signal Officer, U. S. Army.

AVIATOR HOXSEY MAKES NEW RECORD.

Flew 91 Miles from Springfield to St. Louis.

ST. LOUIS, Oct. 8.—Arch Hoxsey, in a Wright biplane, flew from Springfield, Ill., to the Country Club grounds at Clayton, St. Louis county, to-day and established an American sustained flight record in an aeroplane by covering 86 miles in an air line. His time for the 86 miles was 2 hrs. 45 min., an average of 31.2 m. p. h.

His objective landing place was the aviation field at Kinloch Park, but because of his failing to find the grounds he descended eight miles away. He alighted on the aviation field at 3.30 P. M. His time in the air was 3 hours.

Hoxsey tried to find the field, and circled within three miles of it five times. His engine could be heard when he was not in sight. He mistook the smoke of a brick plant for the tar fire on the field, and could not locate the field.

He was seen from the aviation field at 2.14. Soon as Walter Brookins could get an aeroplane started he went aloft to guide his fellow birdman to the field, but Hoxsey veered to the south and was lost to view. Bombs were exploded and the band played as loudly as possible, but the aviator did not hear the guiding noises.

He landed at the country Club, five miles from the field, at 3.11. After he had learned the direction of the aviation field he went into the air again and landed safely.

The flight was the opening event of a ten days' meet under the auspices of the Aero Club of St. Louis.

Brookins, Turpin and Welsh entertained the spectators with flights while waiting the arrival of Hoxsey.

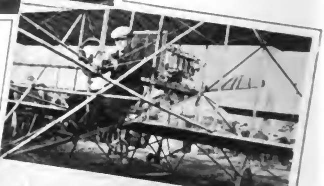
Roosevelt Up.

During the St. Louis meet, with the Wright machines of Hoxsey, Turpin, Parmelee, Welsh, Ogilvie, Brookins and Johnstone, and Leblanc with his Bleriot, Hoxsey took up ex-President Roosevelt for a short flight.

FLIGHT PROGRESS OVER THE COUNTRY

AUGUSTUS POST IN HIS "CURTISS".

J.H. SMIDLEY MONOPLANE WHICH FLEW IN WASHINGTON WITH 2 CYL. STEVENS DURYEA AIR COOLED 18 H.P. MOTOR.



LOUIS ERICKSON AT STURBRIDGE FAIR.

HENRY C. COOKE'S CURTISS TYPE AT MINEOLA.

PHOTO BY JOE BURT MINEOLA, N.Y.

THE Stebbins-Geynet Aeroplane Co., of Norwich, Conn., are building aeroplanes of the triplane type, which have a detachable middle plane, thereby changing from the triplane to the biplane type when desired. They are different from all other American aeroplanes now on the market, as they involve the use of three main planes two combination front horizontal rudders and two combination rear horizontal rudders. They are beautiful in appearance and of simple construction. All joints are firmly held in place by castings of a special aluminum alloy, being strongly built and having a number of novel and original features, several of which are especially praiseworthy. Although this machine only has a twenty-four foot spread and only twenty-six feet long over all, its total amount of supporting area is 400 sq. ft.; weight 600 pounds in flying order, and have a lifting capacity of approximately 700 pounds more.

Frame.—Entirely of a selected grade of Oregon Spruce, finished down to a smooth surface and varnished. All struts are fish shape and set in aluminum sockets which are bolted to top and lower beams with special strong bolts of small diameter. The middle plane is set inside of the six uprights and held in place by aluminum castings. A flexible twisted 7-strand wire cable and Stebbins-Geynet turnbuckles are used for trussing.

Planes.—Top plane is three sections, laced together, having a 24 ft. spread and 7 ft. depth; middle plane in two sections, each of 7½ ft. in length by 6 ft. deep, and set 5 ft. apart for engine; bottom plane in one piece, 16 ft. long, and a depth of 5 ft.; a total supporting area of 350 sq. ft. These planes are set 3½ ft. apart and are set at angles of 9 degrees and so arranged as to have the greater amount of lifting area above and the greatest weight below the center of gravity. The middle plane is detachable, thereby changing from the triplane to biplane type when desired.

Construction.—Ribs are laminated of two pieces of spruce finished down to ½ x ¾ in. cross section dimensions with true curvature of about 1 in 20, and fastened to the beams by a special aluminum casting. No. 2 Naiad aeroplane covering is used in covering the plane and pockets are sewed in for the ribs.

Rudders.—Two combination elevating rudders are set well up in front, each containing 18 sq. ft. of supporting area and arranged to work in unison, independently, or in opposite directions. In Model "B" machine are also two rear small elevating rudders which work in unison with the front rudders. One vertical rudder of 10 sq. ft. is suspended rear of a small stationary horizontal plane in Model "A," while a small vertical rudder of only 6 sq. ft. is hung beneath the small stationary plane in Model "B." The elevating rudders are so arranged as to balance the machine while in flight. Wing tips are also used in balancing. Rudder beams are held in place by a special two-piece casting which forms a hinge, thereby making a quick detachable joint.

Mounting.—The Curtiss type chassis is used for mounting with three Weaver 20-in. wheels and Hartford "*Aviator*" tires. Rear wheel gauge is 60 inches and 15 ft. wheel base. In Model "B" a spring skid is arranged below the main skid in such a way as to automatically drop when aeroplane leaves the ground and absorbs all shock when landing.

Power Plant.—Model "A" is fitted with Cameron 25-30 h. p. four cylinder air cooled motor with a 3⅞-in. bore and 3¾-in. stroke, with Bosch high tension magneto and Rinek Aero Co. propellor, giving very good results. A Model "C" Holmes rotary 7-cylinder motor, which is similar in design to the famous Gnome Motor, is being installed in Model "B." This motor has a 4 x 4 in. bore and stroke, and will drive a Stebbins-Geynet 7 ft. in diameter, 8 ft. pitch, propeller at 1,200 rev. per minute, and a thrust of 350 pounds is expected to be obtained.

Control.—A very simple and positive control is employed, known as the Stebbins-Geynet "auto" control; a pull or push movement operates the elevating rudders, while the balancing is done with side movement or slight turn. The rear vertical rudder is operated with a foot control. Engine control levers are conveniently placed within reach of the left hand and foot brake on the front wheel. An arrangement is to be tried out, whereby the front wheel will be connected with the steering device in much the same manner, as a bicycle is steered on the ground.

Hugh Willoughby's First Flights.

Hugh L. Willoughby has made his first flights with the "War Hawk," at Atlantic City Beach. The flights were under 100 yards and less than 10 ft. altitude, but the machine got in the air at a speed of only 20 miles an hour, running over a track made of smooth boards about 150 ft. in length. Mr. Willoughby found the steering easy and natural, and a little drop of the starboard wing was corrected with a Curtiss shoulder control. The patented control of the engine, with right foot pedal, described in AERONAUTICS last year, worked to perfection.

The front and rear horizontal rudders worked in conjunction with each other as in the Farman machine and some of the Wright aeroplanes. The landing wheels are arranged similar to the Farman. The total weight of the "War Hawk" is 1,019 pounds. The 30 h. p. engine is a stock automobile engine, made by the Pennsylvania Automobile Co., and weighs 430 pounds. Mr. Willoughby is now at work on another machine, which he calls the "Pelican," at Clementon, N. J. On the 15th of November Mr. Willoughby will leave with his machine for his winter home at Sewalls Point, Florida.

Novice Flies First at Exhibition.

George Schmitt, of 5 Royce St., Rutland, Vt., had a contract to fly and had never been in an aeroplane. The payment was contingent upon his actually flying. He did not get the machine ready in time to make any trial flights at all. He never knew even how to start the Elbridge engine, as he did not receive it until a day or two before the date of exhibition. He got his machine assembled at the exhibition grounds and just flew, and got paid. He bought the parts for the aeroplane from Witteman Brothers and assembled them himself.

Flights in Kansas and Missouri.

O. A. Mattingly, of Pittsburg, Kansas, has been making daily flights with his biplane on the prairies west of Pittsburg. Mr. Mattingly damaged his machine somewhat recently, but repaired it and has become so proficient that he has agreed to fly at the Ozark Four-State Exposition, at Joplin, Oct. 8-17.

He says he intends to get thoroughly familiar with the "game," and then try for the St. Louis to New York prize.

His machine has an original device of his own for lateral balancing. The machine and motor were built by the Holbrook Aero Supply Co., of Joplin.

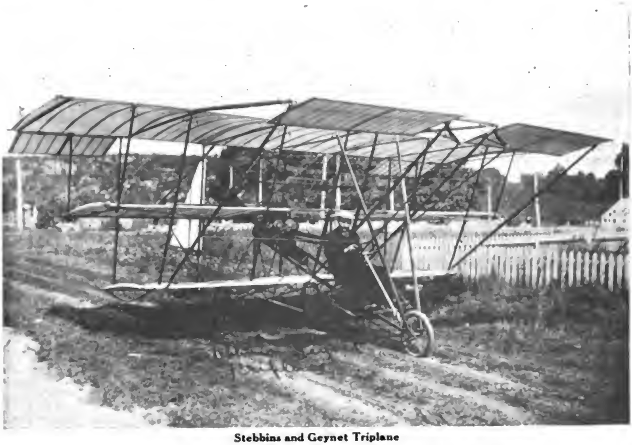
The De Chene-Sowers all-aluminum biplane, which is a Curtiss type in the main, with many original features, is making repeated flights at Joplin, and the makers are preparing to get before the public with it.

New York's Biggest Aeroplane Factory.

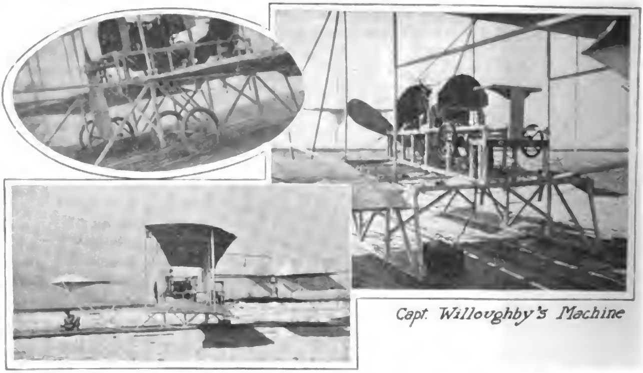
That New York and vicinity has several plants for the making of aeroplanes is not so very generally known, but the searcher for a machine can discover shops tucked away in lofts, in automobile garages and buildings which have sometime served a more earthy purpose.

No one has seemed to pay much attention to the rumor that Capt. T. T. Lovelace, filibuster, "admiral" of a South American one-boat navy, airship pilot, yachtsman, alligator hunter, showman, aviator and balloonist, a "soldier of fortune," had joined with Fred. Thompson, who built Luna Park, the Hippodrome and has for some years been interested in the Fort George amusement park, in the building of aeroplanes on a big scale.

On a high cliff overlooking the Harlem river and Spuyten Duyvil Creek, where Curtiss landed on his Albany-New York flight, is a huge dancing pavilion with a half dozen monoplanes in all stages of construction on its floor. The band's platform is now taken up with a work bench and tools. One of these monoplanes is for Leo Stevens. Another building, measuring 150 feet in



Stebbins and Geynet Triplane



Capt. Willoughby's Machine

length, has a line of shafting its entire distance, running planers, saws and all sorts of woodworking machinery. In still another building is a big lathe, drill presses, forges and other machine tools. Even a casting shop is being arranged. All the machines are run by electric motors. Off the big dancing room are other rooms with draughting boards, work benches and an office.

The buildings, for years allowed to go to rot and ruin, are being patched up and the roofs covered with tin; storm-washed walks are being rebuilt and trees cleared off the grounds to make this historic spot a commonplace factory for the making of flyers.

Captain Lovelace was in charge of the last show the Aero Club of America had. Then he was at the Jamestown Exposition in the aeronautical department. From there he took an airship to Panama, which enterprise did not end in any ascents, owing to impossibility of making the gas there. He was next heard of in London when his airship took fire at an exposition, and a young lady assistant was burned to death. After being with Wilbur Wright at Le Mans and Rome, he was manager of the aerial department of the Humber Company in England. His first public appearance in flight was at the Doncaster meet.

Stevens Buys Aeroplane.

Aeronaut Leo Stevens, who has been sailing and building balloons for many years, has bought an aeroplane—two of 'em.

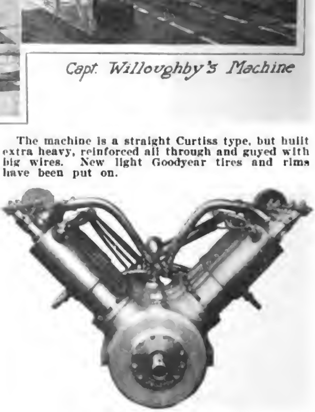
That does not mean at all that ballooning is decadent, but that the aeronaut wants merely a new sensation. Ballooning will always hold its own. In this country the sport has increased in popularity instead of declining.

Stevens has been considering the making of aeroplanes and has looked over the field and has now bought a 35 horse power monoplane built by the Lovelace-Thompson aeroplane and motor works.

Hamilton Has Speed Marvel.

On the 9th of October, Chas. K. Hamilton began flying again after his accident at Pasadena. Without preliminary runs of the 110 h. p. Christie engine, he started from the Aeronautical Society's shed and shot in the air almost instantly. William Wurster, of the W. C. P. Co., swears his speed was 100 miles an hour. He says he timed him over the course, said to be 1¼ miles, but never officially measured, even by America's latest controlling organization, the National Council, in 39 seconds. This figures out at 116 miles. Perhaps Brother Wurster was wrong, but, at any rate, everyone says he has more speed than any record yet, which means 70 miles an hour.

The machine is a straight Curtiss type, but built extra heavy, reinforced all through and guyed with big wires. New light Goodyear tires and rims have been put on.



The Hamilton Engine.

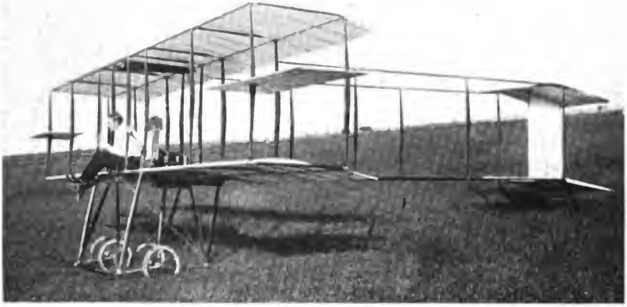
The Hamilton engine was designed by Walter Christie, who says there has been some misprint in regard to it. The bore is 4⅜ x 7 in. stroke. A. L. A. M. rating makes this 61 horse power. The makers rate the engine at 110 horse power at 1,500 r. p. m. In view of the length of the stroke this would seem to be a conservative estimate.

Coddington & Webb (Mangum Webb and C. C. Coddington) has leased a five-acre tract on Providence road, Charlotte, N. C., and will establish an experimental station for manufacturing aeroplanes. A contractor of Charlotte is proceeding with construction of timber building 150x40 and 40x40 feet in size; the company will also conduct an aeroplane school.

Dr. William Greene has made his first flight with his new cross-country aeroplane at Rochester.

O. Chanute Ill in New York.

Octave Chanute arrived in New York on October 8th, and is seriously ill with pneumonia. He has the best wishes for his speedy recovery from thousands of people who are acquainted with him personally, or otherwise, through his work in aeronautics.



Headless Biplane of H. W. Gill

Vermont Man Builds Curtiss Type.

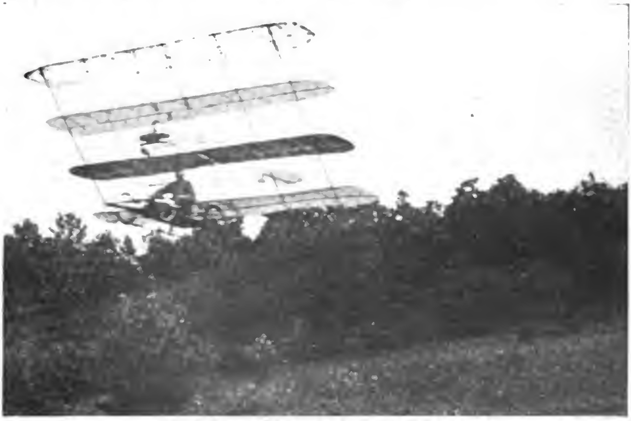
C. C. Bonette, of Passumpsic, Vt., has built a Curtiss type biplane from the information given in AERONAUTICS, and is using the machine for exhibition purposes.

FROM PARACHUTE TO AEROPLANE.

In talking with a representative of AERONAUTICS, Mr. Bonette said: "I have been in the hot air balloon line for the past 18 years, with parachute work. I originated some very good features in this line, including parachute from parachute act, which I did for the first time at Plattsburg, N. Y., in 1903. I had the aeroplane idea soon as the Wrights made flights, and decided to either buy or build one for exhibition purposes, as I could see that it was the coming attraction. I got prices on machines, and could see where I could save a big amount by building my own machine, which I did. I don't believe any machine was ever built under more difficulties, than mine. After nine months of hard work, and lots of remodeling up to two weeks ago, I got a flier.

"My machine is a Curtiss type, leaves the ground nicely, and is a bird in the air. I have an Elbridge 40 h. p. engine that is proving very satisfactory. I have a good offer for the winter with my machine and I want one engine man, and one experienced aviator; can you help me to find the two men? I want these men for six months, and by that time I hope to be able to drive my machine. Will you kindly send me the addresses of one or two good men?

"I use the Requa-Gibson 7 ft. by 4 ft. propeller. I consider these are the best propellers in the market."



M. B. Sellers in Flight with 10 h.p. [rated] Motor

M. B. Sellers May Fly in New York.

M. B. Sellers, of Grahn, Ky., who has been doing such wonderful work in his flights with but a little over four horse power, has equipped his latest machine with wheels for starting. These rise automatically when the machine leaves the ground and allow the aeroplane to alight on the runners. Mr. Sellers' use of this actually antedates the published accounts of the Farman and Antoinette flights, being used in a model in June, 1908. The use of the weight, as described heretofore fully in AERONAUTICS, has been done away with. Successful flights are now being made with a Bates 2-cylinder opposed rated 10 h. p. motor.

Mr. Sellers hopes to come to Mineola soon and show New Yorkers what can be done with a little bit of power. His work has been not to just fly—as almost any machine can do that—but to develop the efficiency of surfaces and a propeller to a point where successful flight may be obtained with the minimum of power.

Women Learn to Fly.

Miss Blanche Scott, the young lady who drove an automobile across the continent, began her trials at flight with a Curtiss machine at Hammondsport on Sept. 26. After a few flights by Glenn Curtiss himself, Miss Scott was allowed to do some "grass cutting" to get accustomed to the controls. After an hour of this she made a couple of short straightaway flights. The rest of that week was a repetition of the lessons, with grass cutting and flights alternating.

Mrs. F. Raiche, whose husband has endeavored to establish an aeroplane manufacturing business at Mineola, has made a number of successful flights with a Curtiss type machine fitted with a Fox "De Luxe" motor. Previous attempts at flights had been made by Raiche but his home-made engine either fell to pieces or did not work. Then he got the Dean engine and the "Missus" tried the machine and it flew "to the Queen's taste." Of course Mrs. Raiche had to break a rib or so in the machine but all aviators of note do that. America can now boast of two female aeroplane pilots.

Mrs. Raiche has been presented, by admiring friends, with a handsome jeweled medal in recognition of her achievements.

Orville Wright's Flights Over Dayton.

On Sept. 22, during the Dayton Fall Festival, Orville Wright flew from the training grounds at Simms Station over the city of Dayton and back, making a most spectacular flight. The distance was about 18 miles. As this was the first flight ever made over the city, the wildest enthusiasm reigned, all business being suspended for the time. The flight was made absolutely on schedule time and was, of course, a perfect one in every respect, great height being maintained during the entire flight. Mayor Burkhardt was a passenger on one flight.

Novel Features in Illinois Aeroplane.

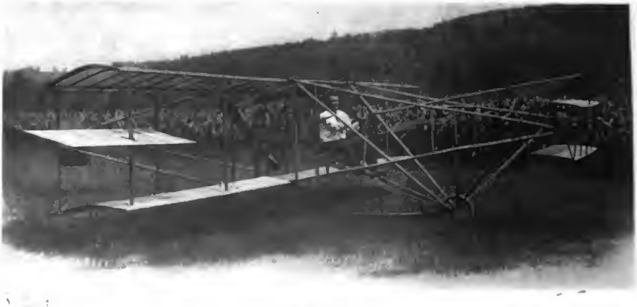
William E. Somerville, of Coal City, Ill., states he has made flights with the novel machine illustrated herewith. The total area is 510 sq. ft., and the machine weighs 1,020 pounds. The upper main plane is 45 x 5 ft., the lower 35 x 5 ft. The tail, 8 x 5 ft., is placed 18 ft. back of the trailing edge. The elevator, 3 x 10 ft., is 10 ft. ahead of the leading edge. The engine has four cylinders, 4 cycle, 5 x 5 in., developing 40 h. p. at 1,000 r. p. m., propeller 7 ft. in diameter by 5 ft. pitch. Angle of incidence 5 degrees when in the air, on the ground 9 degrees. It will be seen from the photographs that the top ends of the main planes are upturned, also that a central fin is placed on the top plane.

The inventor states that he has found the upturned ends of the wings and central fin to be sufficient to maintain lateral stability. He states: "In calm weather I had no use for the Venetian blind arrangement situated near the extremities of top plane, but with a breeze the machine rocks occasionally and I had occasion to open the blind on the high side, and the machine immediately regained an even keel. I am positive as soon as I get accustomed to being in the air that the blinds will not be used, as the upturned ends and controlling fin are all that are required to maintain lateral stability automatically. The longitudinal stability is maintained by the peculiar construction of the tail. The top plane is perfectly flat; the bottom is slightly curved. I had some trouble getting the proper angle of incidence on the tail, but after a few trials the machine flew nicely without oscillation."

A monoplane has also been designed and built with upturned ends and central fin but not yet tried out.

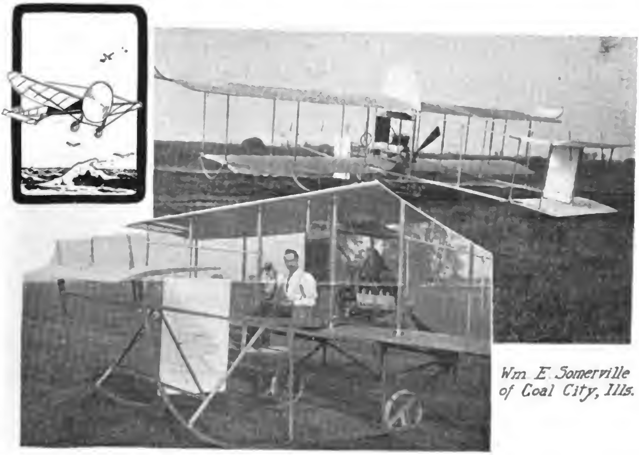
Eldridge Tries Parachute.

Dr. Thos. E. Eldridge, of Philadelphia, recently went up in a hot air balloon at the Trenton State Fair, and returned to earth via parachute. That's a stunt few will follow.



C. C. Bonnette

Orville Wright Flying at Simms Station



Wm. E. Somerville of Coal City, Ills.

THE INTERNATIONAL BALLOON RACE

LT. E. MESSNER.
COL. SCHAECK.
LT. VOGT.
ALFRED LE BLANC.
HAUPTMANN VON ABERCRON.

Lieut. Vogt

Lieut. Vogt is 26 years old. After his work at Strassbourg University he studied meteorology under Prof. Hergeseff. Entered German Army and promoted to rank of adjutant of mounted artillery. Won first position in three long distance balloon races.

Colonel Schaeck

Won 1908 Gordon Bennett for Switzerland and established a world's duration record of 72 hours.

Alfred Le Blanc

Represented France in the 1907 G-B balloon race at St. Louis and finished 2nd, landing at Herbertsville, N. J., a distance of 866 miles. For this trip he made a new duration record for the U. S. of 44 hrs. and 5 mins. He was second in the 1909 G-B race from Zurich. Won $20,000 prize in covering 486 miles across Country in 10 days.

Hauptmann Von Abercron

Hauptmann von Abercron is 40 years old and has been interested in aeronautics since 1899, is a dirigible pilot and captain in an infantry regiment. President of the Lower Rhine Aero Club, the largest in the world. Has made 160 balloon ascents. In 1906, he won prize of the Grand Duke of Baden. He has been in every Gordon Bennett balloon race and finished third in the 1907 race from St. Louis. In a 340 c. m. balloon he has crossed the Alps. Herr Blanckertz is his companion in the 1910 race. The latter is a manufacturer in Dusseldorf, 40 years old, has made many balloon trips and with Abercron as pilot won the King of Saxony's prize in an ascent of 1000 kilometers out of Dresden.

THERE are eight balloons in the fifth contest for the Gordon Bennett trophy, to be held at St. Louis, Oct. 17. Three foreign countries are entered, France, Germany and Switzerland.

Representing France are Alfred Leblanc and Jacques Faure. Germany has Hauptmann Von Abercron, Lieut. Vogt and Ing. Hans Gericke. Switzerland, which country had the cup last, has Colonel Schaeck and E. Messner.

There will be no representatives of Denmark in the race, although the Danish Club had entered a balloon. It seems, or at least it is so reported, that the titled pilot selected could find no one in America who was willing to pay all his expenses for the privilege of being aide.

Besides the trophy there is a cash prize of $5,000, also given by Bennett.

The cup and the $5,000 additional has been given each year, beginning in 1907, when Lieut. F. P. Lahm and Major Henry B. Hersey won the cup and prize on its first offering.

PAST G. B. RECORDS.

Paris, 1906—Lieut. F. P. Lahm, 410 miles.

St. Louis, 1907—Oscar Erbsloh (Germany), 872 miles.

Berlin, 1908—Col. Schaeck (Switzerland), 753 miles.

Zurich, 1909—E. W. Mix (America), 696 miles.

Hawley, Honeywell and Wade Win.

The Aero Club of America has given out the official figures of the elimination balloon race from Indianapolis on Sept. 17.

A. R. Hawley, H. E. Honeywell and J. H. Wade, Jr., will represent this country in the international race, starting from St. Louis on the 17th of October. The distances and duration of each of the competitors follows:

America II.—A. R. Hawley pilot, Augustus Post aide, landing at Warrenton, Fauquier County, Va., 453 miles; duration 44 hrs. 25 min. 30 sec.

Centennial—H. E. Honeywell pilot, W. Lambert aide, landing at Bush Valley, Indiana County, Pa., 379½ miles; duration 23 hrs. 36 min.

Buckeye—J. H. Wade, Jr., pilot, A. H. Morgan aide, landing at Sowers, Floyd County, Va., 371 miles; duration 37 hrs. 38 min.

J. H. Wade, Jr. and A. H. Morgan

Son of J. H. Wade, one of Cleveland's (Ohio) wealthiest residents, who presented Wade Park to the City of Cleveland. He is 27 years of age, and, with his brother, is interested in real estate there. Wade has always been in for anything new and is well liked in his city. What he has done in aeronautics has been purely for sport in every respect.

His aide, Mr. A. H. Morgan was a chum of his in school and they have lived together more or less during their entire life. Mr. Morgan is the president of the American Lithograph Co., and has always been keen on the sport of ballooning.

Their first trip was made as guests of A. Leo Stevens, about three years ago, in the balloon "All America" from Pittsfield, Mass., in company with three others. This ascent was made in a driving snow storm. The party landed that same evening at Canterbury, N. H., after covering a distance of 168 miles. They enjoyed the sport very much and immediately after had constructed a balloon called "Sky Pilot" in which they have made many creditable flights. They have taken into the air many Cleveland boys and have got the better class of the above city interested. On Oct. 4, 1909, they won third prize in the Centennial balloon races from St. Louis.

Million Population City—S. L. Von Phul pilot, J. M. O'Reilly aide, landing at Trafford, Westmoreland County, Pa., 343 miles; duration 21 hrs. 16 min.

Miss Sophia—W. F. Assman pilot, P. J. McCollough aide, landing at Macfarlan, Ritchie County, W. Va., 269½ miles; duration, 24 hrs. 8 min.

Phil. II.—A. T. Atherholt pilot, C. B. Graham aide, landing at Dexter, Meigs County, Ohio, 218 miles; duration, 18 hrs. 52 min.

New York—C. B. Harmon pilot, Thos. S. Baldwin aide, landing at Powellsville, Scioto County, Ohio, 198 miles; duration, 18 hrs. 4 min.

Hoosier II.—Charles Walsh pilot, Maj. Samuel Reber aide, landing at West Milton, Miami County, Ohio, 99 miles; duration, 7 hrs. 6 min.

The duration of the America II. is greater by 20 minutes than the American duration record of 44 hours and 5 minutes, established in 1907 in the Gordon Bennett from St. Louis, which was later broken by Harmon and Post, who made a new American duration record of 48 hours and 26 minutes.

The "America II." and the Buckeye, 80,000 cu. ft. capacity, were built by Leo Stevens of rubber fabric. The Centennial was built by the French-American Balloon Co., of which H. E. Honeywell is the head.

The "Centennial" is the same balloon which won second place in the St. Louis race of October 4, 1909, ten balloons being entered. In this race it scored 488 miles and was up 47 hours and 41 minutes, establishing for the moment a new American record.

The free-for-all balloon race was declared to be won by the "Drifter." A. B. Lambert, the official in charge, gave the decision to this balloon, as at the time of start none of the others were ready to leave. The cup, a diamond studded and handsomely engraved trophy, was given by the Indianapolis Motor Speedway. In addition to the cups offered, gold Speedway Medals will be given the pilots who finished second, third, fourth and fifth. The standing of the balloons in the free-for-all race follows:

Drifter—A. Holz pilot, G. R. Howard aide; landing at Littleton, Wetzel County, W. Va., 325 miles; duration, 21 hrs. 15 min.

University City—John Berry pilot, no aide; landing at McKeesport, Alleghany County, Pa., 350 miles; duration, 20 hrs. 30 min.

Topeka—E. S. Cole pilot, E. M. Jacobs aide; landing at Washington, Pa., 325 miles; duration, 20 hrs. 48 min.

Luzerne—L. E. Custer pilot, no aide; landing at Noblesville, Hamilton County, Ind., 23 miles; duration 2 hrs.

H. E. Honeywell

Balloon builder of St. Louis. Won second place in the elimination race on Sept. 17, and in the Centennial race in 1909, when he covered 488 miles and was up 47 hrs. 41 min., a record duration at the time. Won balloon race from Chicago, July 4, 1908, making 786 miles, with 86 miles of the American distance record. Won third place when aide to A. B. Lambert in Indianapolis race, June 5, 1909. On Nov. 18, 1908, with Lambert he made a long ascent to Tiger, Ga., 461 miles.

THE WEATHER MAP—AN AID TO BALLOONISTS

By Dr. A. J. Henry.
OF MOUNT WEATHER RESEARCH OBSERVATORY.

THE majority of the contestants in the elimination race that took place from Indianapolis, Ind., on Sept. 17th, experienced baffling winds, rain and thunder storms, and were forced to make landings in the earlier stages of the race. The experience of these aeronauts is easily understood by reference to the daily weather map. On the morning of the 17th an extensive area of low pressure overlaid Minnesota, which during the day moved rapidly eastward so that its influence was felt throughout the upper Ohio Valley Sunday night. It should be explained that the lower layers of the atmosphere in an area of low pressure are in a turbulent state, that thunder storms and rain have their origin in areas of low pressure, that ascending currents of air, often of considerable strength, are sometimes experienced in the central portion of these disturbances. The experience of this observatory in attempting to make kite flights in lows confirms the foregoing in all essential particulars. It would seem therefore, that it would be the part of prudence to avoid as far as possible the central portion of lows in attempting balloon flights of any sort, especially those in which long distance flights are contemplated.

MIGHT HAVE DONE BETTER.

In the case in question a postponement of the ascensions for 24 hours would undoubtedly have given much more propitious weather and longer flights. The rear of a low and at only a moderate altitude, says 3,500 to 4,000 feet above ground, would seem to the writer as the most advantageous zone in which to achieve a successful long distance balloon flight.—Sept. 28th, 1910.

Alan R. Hawley

Member of brokerage firm of William Hawley & Co. Director of the Aero Club of America since its beginning. He has made a number of balloon ascents. In the 1907 Gordon Bennett he finished 5th.

BRITISH FABRIC TESTING DEVICE

By T. O'B. Hubbard, Sec'y.
AERONAUTICAL SOCIETY OF GREAT BRITAIN.

OWING to the increased demand for aeroplanes of all descriptions it has been found absolutely necessary to test the strength of the fabric which forms such an important part of their construction, and in order that full reliance can be placed upon the strain the fabric will stand, the machine has been designed by W. & T. Avery, Ltd., of London and Birmingham, for the National Physical Laboratory at Teddington.

The fabric of the required length is placed in specially prepared grips and the strain is applied by hand power, and the equilibrium is maintained by means of fine shot which is allowed to flow into a receiver suspended at the ends of a weighing steelyard.

The specimen may be of any length between 6 inches and the maximum of 25 inches, an elongation of 10 inches being allowed for beyond this dimension.

The weighing arrangement consists of a main lever and a steelyard, fitted with hardened steel knife-edges which rest on hardened steel bearings carried from the main standard.

The steelyard is graduated on both the back and the front, the front graduations range from zero to 200 pounds by one pound divisions, the graduations at the back of the steelyard from zero to 40 pounds by one-fifth pound divisions.

The front graduations are used when both the lever and the steelyard are being used as compound levers for indicating the loads.

When finer readings are required, the weighing system is swung round upon the standard so as to bring the rear knife-edge of the steelyard directly over the specimen; the main lever is then out of use and the steelyard is in operation as a single lever, the graduations ranging from zero to 14 pounds being then used. The end of the steelyard is fitted with a hardened steel knife-edge from which a receiver is suspended.

A spring balance is interposed between the receiver and the steelyard, the dial of which is graduated to show the breaking loads, i. e., up to 1,200 pounds, by sub-divisions of one pound, and 240 pounds by sub-divisions of one-fifth pound respectively. An upper reservoir is carried by a main standard and fine shot is allowed to flow from this to the receiver. The flow of the shot is regulated so that the load is applied to the specimen at the rate of 500 pounds per minute, and the flow is automatically cut off when the specimen breaks.

In preparing and applying the test, the specimen is connected to the roller attachment, the shot is allowed to flow from the reservoir into the receiver, and the strain is slowly applied with either of the two changes of gear, thus keeping the steelyard floating midway in the carrier. For low capacities the quick speed is used for the strain and the weighing apparatus revolved in the standard so as to bring the steelyard into use as a single lever. For high capacities the slow strain is applied and the result weighed by means of the main lever and the steelyard compounded together.

When the specimen has been broken, the receiver containing the shot is suspended from the link hanging from the rear knife-edge of the steelyard and then balanced by means of the loose proportional weights and the sliding poise.

FLYING ON THE COAST

by

Cleve T. Shaffer

HAMILTON AT SACRAMENTO

E. P. De Berry, of the Pacific Aero Club, has a biplane almost ready for trial.

Main Planes.—These spread 30 ft. by 5½ ft. Farman type ailerons on rear edges. The fabric is on one side only and is treated with a secret preparation invented by De Berry's brother. It is both waterproof and elastic, will not crack and makes a smooth finish. The ribs are 4-ply laminated, ¾ x ¾, camber 3½ in., made by the California Aero Mfg. & Supply Co.

Chassis.—Suggestive of the Voisin. Two pivoted wheels which act, by the usual sliding collar, against a 1 ft. coil spring, which compresses a distance of 5 in. under shock. Two skids are fitted to the rear cell and skids such as used on the Wiseman-Peters will be placed on ends of lower plane.

Power Plant.—Rutenber motor, 30 h. p., weighing 198 pounds, drives direct a 6 ft. 6 in. diam. propeller of 4 ft. 6 in. pitch at 1,400 r. p. m. Thrust stated to be 230 pounds.

Controls.—Front and rear rudders. Elevator is operated by hand lever. Rear rudder by foot lever and ailerons by shoulder brace.

Total surface, main planes, 330 ft. Weight, without operator, 600 pounds.

Messrs. Wiseman & Peters, a complete description of whose biplane was given in the September number of AERONAUTICS, are now at work on a new machine, which will embody the ideas and improvements gained from experience with their first aeroplane. They expect to make exhibition flights with both machines. Mr. Wiseman has made some very good flights recently.

W. A. Merralls, of the Pacific Aero Club, a well-known builder and designer of mining machinery, has turned his attention to aeronautics, and is now at work on a combination dirigible and aeroplane, which will incorporate many novel features. He is also constructing a motor of his own design, and of large horse power, in which the weight will be under 3 pounds per h. p. He has kindly consented to give AERONAUTICS a complete description when ready for trial.

Ivy Baldwin Flying.

Capt. Ivy Baldwin, the well-known aeronaut, who operated our army balloon in Cuba during the Spanish war, has followed the example of Captain Thomas Baldwin in deserting the lighter-than-air ranks, and adds his name to the growing list of California aviators.

But for a persistent run of bad luck he would now be touring the country on exhibition flights. His last accident was in an attempt to fly the Golden Gate when the machine became unmanageable in a strong, gusty, wind and crashed to the parade ground of the military reservation where the preliminary trial was to be made. At the weather continued uncertain the attempt to cross was abandoned.

Captain Baldwin's longest flight to date is 12 miles.

The machine used is, except in minor constructional details, almost an exact duplicate of the Curtiss, dimensions being the same throughout.

To the critical eye there are many of the constructional features capable of improvement, and, comparatively speaking, the workmanship appears a trifle crude.

The bamboo upright which extends above the top of the elevator plane to connect with the push rod, while no doubt of sufficient strength, should have some sort of bracing to the rear edge of the plane—a tube such as used on the Curtiss—as bamboo is notoriously treacherous and at this most vital point nothing should be left to chance.

The small tubing of the aileron pivots passes direct through the wood of the end struts. This should have a metal clamp or ferrule to be used as a bearing or reinforcement.

Aluminum sockets with eyes in three sides, for attaching wires, are used with the usual single bolt passing through center, instead of Curtiss type ferrule. Turnbuckles of novel design are used. A Hall-Scott 30 h. p., 4 cyl., water cooled engine drives direct a 6 ft. diameter 4½ ft. pitch propeller of the same make. Weight, 440 pounds, with operator 555 pounds.

Flights by B. F. Roehrig.

B. F. Roehrig, of San Diego, Calif., has for some time been making fine flights with his big biplane. In fact, he says he had made over five hundred short flights and that everything "seems to work satisfactorily." The cost of the machine has been given as $10,800.

The top plane spreads 45 ft., while the bottom is 34 ft., spaced 5 ft. 10 in. apart. The chord of the surfaces is 6 ft. 5¼ in., with the greatest depth 4½ ins. The length of the machine over all is 47 ft. and the weight 1,539 pounds, including the aviator and fuel. The front elevator has 45 sq. ft. and the rear 12½ sq. ft.

There are only two ailerons, set in the planes like the Farman, but they move up and down in opposite directions as in the Curtiss.

A 60-90 6-cylinder Elbridge engine turns an 8 ft. 5 in. propeller, 6 ft. pitch, about 1,300 r. p. m. The engine is giving entire satisfaction. The mechanics think that the propeller is too small for the engine. This propeller is made of laminated birch, 40 laminations, weight 32 pounds. McAdamite castings are used throughout. All woodwork in the machine is laminated, in the main uprights there being as many as 18 laminations, in the outriggers to the tail and in other places 7 laminations of hickory and spruce are used. Roebling cable is used for guying.

The Loose Monoplane.

This popular price machine is as well constructed as the large monoplane of the same make illustrated in the July number of AERONAUTICS, and embodies in its compact make-up some original ideas of novel description.

The adoption of wooden diagonal cross stays or bracing in the fuselage is the most striking feature, there being absolutely no guy wires used, except those guying the extremities of the planes to the lower part of the fuselage. Upon close inspection the machine is found to be built up almost wholly of a number of triangles, the advantage of which from a point of strength is well known.

First-class material of standard make has been used throughout, such as Palmer tires, Naiad cloth, Camasco ribs and Aviator cord.

Total spread 31 ft. 8 in. and 20 ft. 6 in., fore and aft.

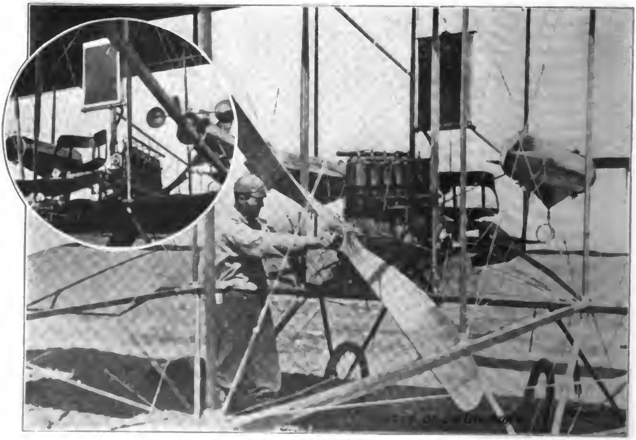
Planes in two halves, suitable for shipment. Single surface. Chord 5 ft., camber 4½ in., ribs ¾ x ¾ in., 4-ply spruce, made by the California Aero Mfg. & Supply Co. Beams 1¼ x 3½ in., are of oak and placed on top of ribs. The fabric, Naiad No. 2, is laced at the center, and also to a wire, which passes through the ferrules on rear ends of ribs, is tacked on under side of ribs. A drum tight surface is obtained. Incident angle can be varied by a simple adjustment.

Front edge of elevator is distant from the rear edge of main plane 9 ft. 7 in., and is moved by a push rod, connecting with a lever at the right hand. Surface, double covered, about 21 sq. ft.

Rudder, double covered, of about 8 sq. ft., is pivoted immediately in the rear of elevator and is operated by a foot-lever, as is the lateral stability device.

Fuselage is the usual triangle of the Demoiselle type, composed of 1-in. round ash, spruce and oak members, which are fastened securely by steel clips, making a very neat, strong and easily detachable connection.

Two 20 x 2¼ in. steel wheels equipped with Palmer tires support the machine in front, and two skids at rear. Wheel tread 56 in. Seat may be adjusted to balance motor. This machine would



Power Plant on Roehrig Aeroplane

appear to be suitable for the opposed cylinder type of engine. Later models have the spread cut down to 26 ft. and the chord lengthened to 6 ft., with a higher camber.

By Prof. H. La V. Twining.

LOS ANGELES, Cal., Oct. 6.—On Oct. 22 and 23, the Aero Club of California will hold a local novice meet, in the aerodrome, some 12 miles from Los Angeles, where the club has its grounds and aerage.

The progress of the members of the club, who are building machines, will be clearly shown at this meet. A year ago none of the members had succeeded in leaving the ground. The club itself had no home. The big mid-winter meet of the following January was being agitated. The only members who had completed machines up to this time were A. L. Smith and J. S. Zerbe.

Mr. Smith's machine, a biplane, failed from lack of a proper motor. and Mr. Zerbe's multiplane refused to leave the ground at this time and during the meet.

To-day the club has two fliers in the persons of Walsh and Roehrig, formerly of San Diego. Duesler and Slavin of Los Angeles are able to make short flights. The Greer Bros. come next with still fewer and shorter jumps, while the Eaton-Twining machine brings up the rear with short hops to its credit.

The Cannon brothers have made some remarkable towing flights inside of the aerodrome. Their machine is a Curtiss biplane. They attached it to an automobile by means of a bridle attached to the lower end of the two forward struts near the middle of the machine. The running gear is not the same as the Curtiss. It consists of three wheels mounted on a triangular frame, two wheels being under the rear of the planes and one forward of the main planes. These wheels are flexibly attached to the frame by a spring mechanism, making the whole flexible and strong. They were towed in a circular course, a quarter of a mile in circumference. The machine weighs 350 pounds. Jack Cameron drove the aeroplane. On the first few trials they met with some accidents, but with a little practice Jack was soon able to manage the machine with skill and dexterity. After circling the course, the machine rose on the side of the course, which brought it facing the wind.

After rising from the ground, it maintained an altitude of from 10 to 20 feet, but on making the turns it sank lower, often scraping the runner at the tip of the plane on the ground for many feet, while making the turn. A spring balance was attached to the automobile, to which the bridle was made fast. At thirty miles an hour the balance showed a pull of 150 pounds.

One passenger was taken on, thus adding the equivalent in weight of a motor. Under these conditions it took a pull of over 200 pounds at thirty miles per hour to maintain the machine in the air.

The flights were maintained several times around the course, and the aeroplane was managed perfectly by the aviator, with his controls giving him excellent practice. In fact the skill with which the turns were negotiated, with and without a passenger aboard, indicate that Mr. Cannon will blossom into a full fledged aviator as soon as a powerful enough motor is installed. They are installing a 22½ h. p. Ford automobile motor, "T" model, which they are modifying to suit their purpose. These towing flights are the most remarkable of their kind, in so far as I know, that have yet occurred.

Besides the above mentioned machines, Mr. Thompson of Pomona and Mr. Day of Long Beach are planning to be at the meet. Mr. Thompson has made short flights. Mr. Day will have his machine on the ground next Saturday.

The Knabenshue cup was awarded to Mr. Roehrig of San Diego. On admission day he flew many times the required distance, and the directors of the Aero Club awarded him the cup.

The Citizens of San Diego put up a handsome cup for the aviator who should make the highest flight at the coming meet.

The Leonard Smith cup will go to the one who makes the longest flight.' Other cups will be put up before the meet.

Both Willard and Hamilton are members of the Aero Club of California, so that in addition to the local men the club has on its membership roll two of the noted American flyers.

The Loose Monoplane

AT THE MINEOLA AVIATION GROUNDS

MINEOLA, N. Y., Oct. 12.—Mineola's flying grounds were quiescent for a period of several weeks following the graduation of the season's first flock of birdmen. Things were very lively there during July and August with Harmon, Baldwin, Frisble and Tod Shriver flying almost every day. But during September they went their various ways—Captain Baldwin, Frisble and Shriver to fill engagements in the West, and Mr. Harmon to Boston, and the field was left almost deserted.

October has brought renewed life to the place, however, and what with the return of the wanderers from their travels and the hatching of a new nestful of fledgilngs, the place is busier than ever.

Frisble has come back with a new stunt, practiced and perfected, it is said, in Wilmington, Del. Accidentally, or on purpose, he effected a landing on the top of a large barn, whence he gracefully floated into a cornfield. Incidentally, Frisble has the speed-bug and talks of replacing his present power plant with a big six-cylinder Elbridge engine.

Charles K. Hamilton, looking the ghost of his former self since his accident in California, is on the field nearly every day.

Among the new flyers who have been making successful trial flights recently are Henry Charles ("Dr.") Cooke, Chester Kaufman, E. F. De Murias and Wilson Post. Cooke has a modefied Curtiss type machine, with a spread of 34 feet in the upper and 29 feet in the lower plane. He has strengthened his machine in many ways and on October 8th and 9th he made half a dozen very pretty flights. Either luckier or more skilful than most, he made all of his landings safely, without so much as buckling a wheel or cracking a strut.

Kaufman was less fortunate if more spectacular. Taking out the practice machine belonging to G. E. De Long, he started across the field with the engine partially throttled down just to get the "feel" of the machine. But the temptation to try a flight proved irresistible and in a few moments he was flying very prettily across the field. Half a dozen straightaway flights were made successfully and then the novice, emboldened, tried the more difficult feat of circling the field. The "Graveyard" got him. He was turning nicely when one of the guy wires supporting the rear control gave way and the machine crumbled like a house of cards. Kaufman was extricated uninjured, but the "White Slave," as the machine is known to the denizens of Mineola, was sadly wrecked.

D. Massan, who came to this country last year with Paulhan, is now emulating his illustrious former employer in the realms of the air. He has nerve, and to spare, and great things are expected of him for the future. He is using a machine built by P. Brauner & Co., which is at present equipped with an automobile engine, but in which he expects shortly to try a four-cylinder Elbridge motor.

Bud Gaskell is another nervy youngster who has made a number of straightaway jumps, but who has not yet had opportunity to learn to make the turns.

Dr. H. W. Walden, who had quite a serious spill a couple of months ago, has recovered sufficiently in health and courage to give his machine another trial. Carrying a passenger he indulged in a few grass-cutting flights on October 8th. He has two 25-30 Anzani engines. The Walden-Dyat Company has been formed to build aeroplanes and a big shed has been erected on the Mineola field.

Joe Seymour has been away flying at the fair at Oneonta, N. Y. George Russell was away all last week flying at the fair at Danbury, Conn.

Herman Steinbrugge has purchased a monoplane which shows all the signs of strength rather than refinement in construction.

Miss Todd's machine is awaiting the arrival of a Rinek motor. The Rinek company is going to see that the motor runs perfectly and does perfect work in the machine, so far as money and experience can be used.

Harry Chandler and Glenn Ethridge, who have a biplane of their own type, have bought the tent that was formerly occupied by George Russell, and have moved into their new quarters.

The "Imp." built by Elmer Burlingame, has been taken back to Boston. Mr. Burlingame intends building a new machine this winter and bring it out next spring.

The Mohawk Aviation Co. has succeeded in breaking one wing of their Curtiss-type biplane in landing the other day. They have just pitched a new tent in the parking space.

Harmon, while attempting to fly for the Chinese prince, smashed his running gear. Tod Shriver, after being introduced to the prince, got into his machine and flew to the far end of the field and returned, in a strong wind, making the flight at an average height of 10 to 15 feet.

Harry Harkness has done some fine work with his Antoinette machine, making several complete circuits of the field at an altitude of from 15 to 35 feet.

Grahame-White has been making some flights with Harmon's reconstructed Farman, taking up various passengers. He seems to value his services highly as an attraction for exhibitions as, it is said, his price was $25,000 for a week of flying at St. Louis.

BOOK REVIEWS

"The Airy Way," by George A. B. Dewar, 8vo., cloth, 253 pp., $1.75. The Macmillan Co., New York. "The Airy Way" is in the main a book of flight; its theme is the magic and mystery of the masterfeat in all Nature. The author has been watching for many years the wing feats of birds, bats, and insects; amongst others, the feats of the swift, the swallow, the rook, the herring gull, the saddleback gull, the black-headed gull, the golden-crested wren, the woodpeckers, the fritillary butterflies, the purple emperor butterfly, dragon flies, syrphi flies, bees, the pipistrelle bat, and other species of its kind. It is perfectly simple, written throughout in the simplest English.

"Percy Pierce Flyer," pamphlet giving full directions for building the Pierce model, together with large size scale drawing. Published at 15c. by Spon & Chamberlain, 123 Liberty St., New York.

"Model Balloons and Flying Machines," by J. H. Alexander, M. B., A. I. E. E., small 8vo., cloth, 127 pp. ills., with 4 sheets of good drawings with details for model building. Published by Norman W. Henley, 132 Nassau St., New York, at $1.50.

Formulaire Pour La Construction Des Aeroplanes.—Un volume de poche.—Prix: 3 francs.—*Librarie Aeronautique, 32 rue Madame, Paris.*

Divisé en cinq grands chapitres: Résistance de l'air, Dynamique de l'aéroplane, Propulseurs aériens, Moteurs, Résistance des pièces d'un aéroplane, cet ouvrage donne sous un format commode l'exposé succinct de toutes les formules et méthodes de calcul ce qui permettra à chacun d'avoir toujours sous la main un résumé parfait de l'état actuel de la science aéronautique.

The *Intercollegiate* for October certainly ought to prove of value and interest to every college man who is a member of the Associated Clubs. This number contains heart to heart talks from each of the University aero clubs, and a short review of the aero journals.

News In General

Hearst $50,000 Prize.

The *New York American* has offered a prize of $50,000, open from October 10, 1910, to October 10, 1911. The conditions are as follows:

The distance, approximately 3,000 miles, must be made in 720 continuous hours, or 30 days. Start must be made either from Boston or New York City, finish made at Los Angeles or San Francisco, or vice versa, from West to East. A landing must be made in Chicago on the way. It is optional with the contestant whether East or West. Any route may be chosen, stopping as often as wanted, and as long as desired in any town. It is permissible to make flights of any distance or duration providing entire distance is traversed in consecutive town to town flights within the time limit of 720 hours or 30 days. Aeroplane may be repaired as often as desired. Any broken, damaged or defective parts may be repaired or replaced at the option of the contestant at any stage of the flight, and as frequently as the judgment of the contestant may dictate. To all intents and purposes, the contestant may rebuild the aeroplane on the way by substituting all the damaged or broken parts, or any other similar machine, but the prize winner must use the same machine throughout. Any type of self-propelled aeroplane or a heavier-than-air flying machine capable of carrying the contestant may be used. Any person, regardless of sex, nationality, race or residence is eligible to compete. Fourteen days before attempting the flight, contestants must deliver in writing to the *New York American* approximate time and place of start, route and point of finish. There are no other conditions.

Incorporations.

Reimers-Mair Biplane Co., Chicago, $2,500; A. P. McArthur, F. C. Reimers and J. E. Mair.

Romano Aerial Navigation Co., of Seattle, $250,000; Jean Romano, C. I. D. Looff and William Looff.

Aerial Equipment Co., Manhattan; manufacture aviation equipment; capital, $2,000. Incorporators, Benj. S. Catchings, No. 276 Fifth Ave.; Yves de Villers, No. 735 Seventh Ave.; F. H. Johnston, No. 315 Fifth Ave., all of New York.

Buchanan Aeroplane Co., Detroit, $5,000; Wm. L. January and George A. Marsh.

Morrison Automatic Flying Machine Manufacturing Company, Cincinnati, O., $10,000; Sylvanus S. Morrison, S. O. Needham, W. L. Buckman, D. T. Fenner, F. C. Waltz.

St. Louis Show Increases Space.

Arrangements have just been concluded whereby the Coliseum in St. Louis, scene of the first aero show of the Aero Club of St. Louis, November 17th to 24th, will have fully one-third more exhibition space than at an exhibition ever held there before. This has been found a necessary measure to accommodate the large number of exhibitors, many of whom will show complete aeroplanes.

Although the regular capacity of the Coliseum provides floor space almost equal to that of the great Madison Square Garden in New York, a raised platform running entirely around the arena will be constructed and used for the first time at the aero show. By this system there will be room for exhibitors all the way around the platform, the space being about ten feet deep and the platform itself fifteen feet wide.

The platform will also serve as a promenade for spectators and a starting place for the races between model aeroplanes, a number of which have already been entered for the prizes offered.

When the plan of holding an aero show in St. Louis was originally considered by the Aero Club of St. Louis, it was thought that there might not be enough of an aero industry already established to make it a success, and it was argued that builders of apparatus would be unwilling to pay money for space.

Both of these objections have been met, however, for there are more than eighty thriving manufacturers in the United States. The money which they pay for space is only a guarantee for the Aero Club to finance the undertaking. It cannot fail to be of great benefit to all concerned, and the profits of the show are to be divided pro rata among the exhibitors afterwards. In this way the exhibitors will not only be freed from all expense for their space in the end, but may even reap a dividend.

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SOME NEW AERO MOTORS

The Roberts Aeronautical Motor.

A new motor is ready for the market, built by the Roberts Motor Co., Sandusky, O., which company has had years of experience in both gasoline engine design and construction, and in aeronautics. The designer, Mr. E. M. Roberts, M. E., was formerly chief assistant and designer to Sir Hiram S. Maxim, on his celebrated aeronautical experiments in England in '94 and '95.

Mr. Roberts has been for the last ten years considered one of the foremost designers of gasoline motors in this country and a leading authority on this subject. He has designed over one hundred and seventy-five different gasoline engines and is the author of seven books on gas engines and kindred subjects.

In the Roberts aeronautical motor all freak ideas and untried plans have been avoided. No motors are better known for ease of starting, flexibility of control, smoothness of running and continuous operation without missing, than the Roberts marine and automobile motors.

Roberts marine motors are used to a great extent for racing where they have to run at speeds from 1,000 to 1,200 revolutions for hours at the time, and where the least bit of trouble would lose a race. The Roberts motor has a long list of victories, many of them are with boats more powerful than the boat powered with the Roberts motor, and a great many of the wins are due to continuous smooth running without mishaps of any sort.

Quite a little of this success is due to the long bearings, especially on the crankpins. The Roberts motor is 4½ in. bore by 5 in. stroke, and the crankpin is 2½ in. long. This means continuous running without heating. The pistons are long and equipped with three rings. The bearing surface is nearly 30 per cent. longer than used in a great many of the high speed types of this size. The engine is of the customary 3-port type construction with the exception that instead of the port to the crank-case being controlled by the piston. A rotating tubular valve is employed by means of which the timing of the opening to the crank-case can be better controlled and greater economy can be secured than with the regular three port type.

The motor is fitted with the well-known Roberts cellular bypass, which absolutely prevents back firing or base explosions and permits operation on a very dry mixture not overloaded with gasoline. The motor can be run at low speed on a normal mixture of gasoline vapor and air.

The water circulation is by means of a large gear pump cast in one piece with the crank-case, pumping into a passage in the crank-case and then through a passage in the cylinder walls in which the water flows around the exhaust passages and keeps the motor from overheating.

It will be noted that part of the water jacket is cored into the cylinder casting, the balance being covered with an aluminum water jacket into a groove in the cylinder itself. Steel cylinders, cast iron pistons, and bronze rings are used, and the crank-case is of magnalium.

The ignition is by a Bosch magneto with special advance mechanism by means of which the drive of the magneto is advanced and all sparks occur at the hottest point in the ignition curve.

The motor weighs complete with Bosch magneto and carbureter 165 pounds, and will develop 40 actual brake h. p. at 1,000 r. p. m., 46 h. p. at 1,200, and 52 h. p. at 1,400.

The motors are guaranteed against defective material and workmanship for one year from date of sale.

The price including radiator and propellor especially designed for your aeroplane will be $1,500.

Fox Aero Motor Just Out.

Fox De Luxe Aero Motors have been on the market for some time, but the manufacturers have withheld all information until this edition of AERONAUTICS waiting until they could complete their line of aero motors and make a number of important tests under actual working conditions; these tests have now been completed by their chief testor at Mineola, Long Island.

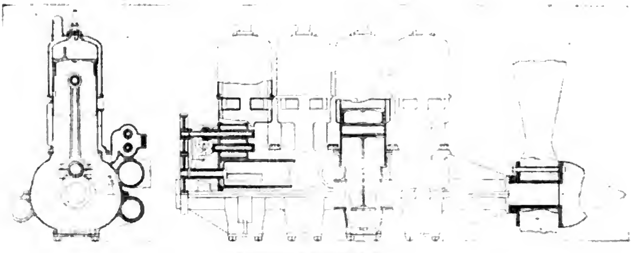
There are several features about Fox aero motors, most important of which is the Fox fourth port accelerator, which enables the operator to perfectly control the speed of the motor during flight.

Second. The radiator is mounted on the engine and there is forced circulation of cooling water. These motors have been run on chassis tests for two hours without changing the water or making outside connections.

Third. Each motor is sent out on thirty days' trial, under a broad guarantee to refund the buyer's money if the motor does not prove satisfactory in every respect.

It will be remembered that the same company has been manufacturing Fox marine motors for years, and the endurance qualities have been tried out in their speed motor boat, "Br'er Fox," which made a remarkable run from Cincinnati to New Orleans, a distance of 1,554 miles, at an average speed of 29.08 miles per hour. These aero motors are of the same type but lighter in construction.

The policy of this company in making a complete series of tests before advertising that they are in a position to fill orders should be commended. The great demand for aero motors opens up a big field for the experienced engine manufacturer. Full details will be furnished by The Dean Manufacturing Company, "South Cincinnati," Newport, Ky.



Elevation of Roberts Motor

The D. L. Herman Motor.

After a great deal of experimenting between one of the well-known men in the aviation field and one of the largest gasoline motor builders in the country, they have developed a very high grade, dependable aerial motor, V type, 8-cylinder, 4-cycle motor, having L-type cylinders cast in pairs. The reason that eight cylinders were decided on is that an engine with this number of cylinders gives continuous power with little vibration—something which is necessary in the air and which cannot be gotten with two, three or four cylinders. The hollow crank shaft, which is made from Krupp's best grade of crusible chrome nickel steel, has three line bearings of die-cast, cadmium nickel bronze, which material is also used on the piston pin bearings in the piston.

One of the patented features, and one which makes this motor unique, is the single cam shaft of one-piece construction, hardened and ground. This cam shaft not only operates all 16 valves, but also drives the centrifugal pump, giving positive circulation. This construction eliminates 30 moving parts, and also eliminates all pins, etc., which are liable to work loose and cause trouble. The cam shaft gear is of special alloy steel, running into an intermediate fibre-filled gear, thereby making a light, and at the same time silent, train of gears. The valve tappets are hardened and ground, having fibre inserts. Another special feature is the valve, which has gray cast iron heads fused on steel stems by a patented process, which not only makes it impossible for them to wear loose, but also gives a valve head of a material which has the same expansion as the iron of the cylinder, thereby eliminating breaking of valves.

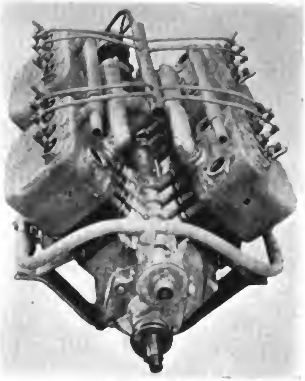
The builders were not suited with aluminum, and decided that the only material to use was "Aerial Metal," which is produced by a well-known foundry in this country. It is claimed to be fully 15 per cent lighter than aluminum and one-half again as strong. This material was used not only for the crank case, but also for the water jackets, pipes, gear housings, and, in fact, wherever a light alloy could be used without jeopardizing the serviceable properties of the motor. The crank case has spacious hand holes, which make the connecting rod bearings very accessible. The water jacket being cast separate from the cylinder makes it possible to thoroughly inspect and check up the iron cylinder castings in a way that could not otherwise be attempted. These jackets are not shrunk on, but are bolted into position with chrome nickel steel bolts in such a way that the difference of expansion between iron and aerial metal may be taken up in the bolt holes, so that should a cylinder get hot the water jacket does not crack.

The oiling system is splash, with force feed oiler to crank case, the reason for this being that this makes a positive method of lubrication. It might also be mentioned that a majority of the successful automobile motors use a force feed oiling system.

The ignition system is high tension, any magneto desired being supplied with the motor. These motors are built in two sizes. The smaller has a 3⅝-in. stroke and 3¾-in. bore, and develops at 1,800 revolutions 45 h. p.; at 1,200 revolutions 34 h. p.; and completely equipped, ready to run, weighs less than 175 lbs. The hollow crank shaft is 1½ in. diameter, end bearings 4½ in. long, center bearings 3½ in. long, pin bearings 1 11/16 in. long, piston pin ¾ in. diameter, valves 1½ in. diameter. This motor sells at $1,750.

The larger motor has 4-in. bore and 4¾ in. stroke, and will develop at 1,800 revolutions 70 h. p.; at 1,200 revolutions 56 h. p.; and when completely equipped and ready to run will weigh less than 210 lbs. The hollow crank shaft is 1¾-in. diameter. The end bearings and the center bearings are 4½ in. long, the pin bearings are 2 in. long. The piston pin is hollow and ⅞-in. diameter. The valves are 2-in. diameter. This motor sells for $2,500.

In order to prove the dependability of these motors by the most gruelling test possible, one of the smaller of these motors was mounted in an automobile truck, the manufacturers state, and run over 5,000 miles on very rough roads, loaded with sand and pig iron, and has not required repairs of any kind. This motor is expected to run until it breaks down. It has been run on the block without a stop for 72 hours at full load under brake test, and it has been turned over as high as 4,200 revolutions per minute.



The Herman Motor

General Machinery Co. Build Aero Motors.

The General Machinery Co. of Bay City, Mich., have for years had unqualified success in their production of the famous Smalley marine motor, and discovered something over a year ago a method of casting an aluminum cylinder with cast iron liner for the piston travel, which enhanced greatly the power and lightness of their motor, and met with the unbounded approval of boat motor users for its lightness, greater power and remarkable beauty. They have been quietly and seriously at work to produce an all aluminum airship motor that would meet all the requirements for power, reliability and lightness of weight, with all the good points that made their marine motor so famous a race winner and so popular with the discriminating users of boat motors. They have named their aviation motor the Smalley-Aero and now have it complete and perfect in every detail. The great lightness of this motor is obtained by its material—aluminum—and no factor of safety has been risked by cutting down the working parts or in any way sacrificing strength for weight.

The Wright Brothers' first power flight was made on Dec. 17, 1903.

Curtiss' first was in the "White Wing," of the Aerial Experiment Association, May 22, 1908. His first in the "June Bug" was June 21.

Ralph L. Bray, of 560 Broadway, Long Branch, N. J., has completed two machines, a monoplane and a Curtiss-type biplane. The Curtiss machine has 30 ft. spread by 5½ ft. fore and aft in the main planes, which are spaced 5 ft. apart. Without the motor it weighs less than 250 pounds. The builder is now looking for a motor.

During the recent exposition held at Rochester, N. Y., the Bausch and Lomb Optical Co., presented to the city a Stevens-built balloon. This was suspended half a mile above the city, from which an American flag 80 by 100 ft. was flown.

George A. Richardson, president of the Intercollegiate Aeronautical Association, has started a series of aero lectures. The first was before the U. of P. and the next before Swarthmore. Both were well received. Mr. Richardson is a U. of P. man, 34 Rodney Dormitory, Philadelphia.

NEW AERONAUTICAL PATENTS

The name of Thomas A. Edison attached to an aeroplane patent naturally calls forth public attention. His interest in aeronautics apparently dates from Farman's financially disastrous—for the backers—visit to America several years ago.

It seems peculiar that the first impulse, after copying the flapping of the bird, is to follow the theory of the helicopter, eventually drifting to the aeroplane as the problem more easily solved. Perhaps the helicopter will yet be a reality.

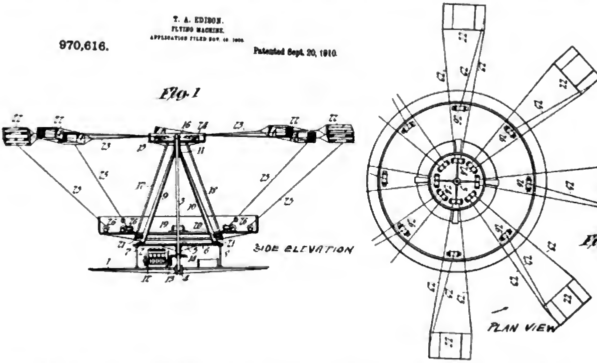
The Edison invention provides for a series of aeroplane members, which, on being rotated through the air about a central axis of the machine as a center, and held at a given angle to the horizontal, will exert a lifting force transmitted to the body of the machine. Preferably, these aeroplane members are in the form of box kites 22, which are connected to the frame of the machine by flexible means as cords or wires 23, and are sustained during rotation by centrifugal force. Means are provided by which the inclination from front to back of the aeroplane members to the horizontal may be changed, the lifting force exerted by the air on such members depending on the angle of inclination of said members as well as on the speed of rotation.

Flexible propellers have been successfully employed in the Parseval dirigible.

The apparatus is provided with a central vertical shaft 3, which rotates in a bearing 4 in the floor or staging 1. The shaft 3 is likewise supported by a bearing 5 in horizontal member 6, which is supported from floor 1 as by vertical members 7 and 8. Members 9, 10, etc., mounted on the member 6 support a sleeve 11 which constitutes the upper bearing for vertical shaft 3.

Shaft 3 is rotated within bearing surfaces 4, 5 and 11 from the engine 2 which carries on the shaft 12 thereof, a bevel gear 13 meshing with bevel gear 14, pinned or fastened to shaft 3. Upper and lower members are fastened to shaft 3 to rotate therewith and are likewise fastened together. The upper member 15 is formed with a central hub or sleeve 16 fastened to shaft 3, which bears on sleeve 11 of the stationary frame of the machine whereon it may revolve with the aid of any antifriction device. This platform 15 is secured as by members 17, 18 to a lower platform or horizontal member 19, which is adapted to rotate about the stationary frame, bearing in its rotation on member 20 of said frame, which constitutes a ring, rollers 21, 21 of the rotating platform 19 having rolling engagement therewith.

Piano wires or other flexible means 23, extend from loops attached, one to the forward end, the other to the rear end of the inner side of each of the kites. These wires 23 are secured to rotating platform 15 at the upper end of rotating shaft 3, preferably by means of reels 24, by which the length of connections 23 may be regulated. By such connection, when shaft 3 is rotated, the kites 22 are acted on by centrifugal force to rotate in the horizontal plane of reels 24 when the speed of rotation of shaft 3 is sufficiently great. The tendency of the center of gravity of the kites to fly to the greatest possible radial distance from shaft 3 would cause the kites to rotate with the upper and lower members thereof horizontal, the side to which wires 23 are attached being the inner side during such rotation, if no additional means were provided to cause said upper and lower members to assume a fore and aft slant. Piano wires, or other flexible connections 25 constitute such means, however, and are attached to the edges of the kites which constitute the rear edges during rotation, these wires being attached to the lower rotating platform 19 by means of reels 26. By means of these reels a greater or a less amount of wire 25 may be wound in or let out, thus controlling the horizontal angle of members 22 during their rotation. The kites 22, when so governed, constitute practically a screw, the pitch of which may be changed. The lifting force caused by the revolution of members 22 is due to the vertical component of the force exerted by the atmosphere upon the kites in their rotation. This force increases, of course, with the velocity at which the kites travel in their circular path. This force likewise varies with the angle of inclination of the kites as they are forced through the air, and this may be regulated through reels 26. The tendency of the centrifugal force acting on the kites is to keep the forward end of the kites up to the horizontal plane in which reels 24 are situated. Cords 25 restrain the tendency of the rear ends of the kites to also revolve in the same horizontal plane, and by shortening these cords, the angle of inclination of the kites may be increased. If desired, reels 26 may be connected together so that the angle of horizontal inclination of all of the kites may be instantly



changed at will by the operator of the machine, this change of the angle of inclination constituting means for governing the lifting force exerted on the machine. If desired, also, spring connections may be provided between reels 26 and wires 25, adjusted for any desired speed of rotation to allow reels 26 to act in tension between certain limits, and to allow the angle of pitch of the kites to vary somewhat from a given desired angle according to the conditions.

It is obvious that kite members 22 may take the form of any aeroplane members now known to the art, either of flat surfaces or surfaces somewhat curved, and furthermore, that various changes in the construction and details of the device disclosed may be made without departing from the spirit of the invention.

Louis R. Adams (a vice-president of the Aeronautical Society), New York, N. Y., 965,792, July 26, 1910, filed Feb. 5, 1909. AEROPLANE, one feature of which is for the central portion of the lower plane to be in advance of the upper plane. Another feature is to produce a rigid structure of light weight and novel design: the frame of the two planes consists of four principal members, the ends of which are secured together in groups of two. Spreader rods between these members cause a bow, forming a downward curve in lower plane and upward curve in upper plane. Ribs between the members of each plane separate them and form a suitable surface for attaching the covering.

Samuel H. Gilson, Salt Lake City, Utah, assignor of one-third to Jay S. Milner, Salt Lake City, 964,771, July 19, 1910. Filed July 27, 1909. AEROPLANE, the characteristic feature of which is that the planes are pivoted to the body or chassis so as to rock thereon like a see-saw to maintain lateral stability.

Halvor Olsen Elsne, U. S. Navy, 964,957, July 19, 1910. Filed June 1, 1909. FLYING MACHINE, comprising a main plane having uprights at the top of which two bars or shafts extend at right angles to each other. One shaft supports planes while the other supports propellers and this upper structure is capable of a rocking movement without interfering with the transmission and rotation of the propellers.

Hans Schouboe, Omaha, Neb. 965,021, July 19, 1910. Filed Oct. 15, 1909. FLYING MACHINE. A gas envelope supporting a sling and saddle to maintain the operator in an upright position. "Ancillary buoyant bodies" connected with the feet and hands to serve as propelling means when reciprocated.

Frederick H. Wales, Imperial, Cal. 965,969, Aug. 2, 1910. Filed Nov. 4, 1909. FLYING MACHINE. An aeroplane with superposed surfaces and a car pivotally suspended from the lower plane so connected to the upper plane as to cause the latter to slide when the machine tilts and thereby produce automatic equilibrium.

Malcolm Grover Adams, Parsons, Kan. 966,151, Aug. 2, 1910. Filed Dec. 5, 1908. FLYING MACHINE. An aeroplane consisting of a plurality of superposed planes, of dome-like form, and arranged in pairs. One set being below the car and the other above.

George Otis Draper, New York, N. Y. 965,881, Aug. 2, 1910. Filed Dec. 3, 1909. LANDING AND STARTING APPARATUS FOR AEROPLANES. An upright pillar is provided at the top with a horizontal arm pivotally mounted thereon: at the outer extremity of the arm is a "ring like receiver" suspended therefrom to receive a projecting member of an aeroplane.

Hermann Gotham, Celle, Germany. 966,395, Aug. 2, 1910. Filed Sept. 22, 1909. MEANS FOR SHELTERING the landing places of airships from the force of the wind, consisting of a compressed air conduit surrounding the landing place and provided with orifices which may be opened and closed at will. The purpose is to issue air currents of great velocity in an upward direction to protect the balloon or airship while landing.

Albert Hugg Friedel, Baltimore, Md. 967,359, Aug. 16, 1910. Filed Aug. 28, 1909. FLYING MACHINE of the aeroplane class having a multiplicity of surfaces, both horizontal and vertical, bisecting each other. Movably adjustable planes are also provided at the top of the structure consisting of outwardly and upwardly projecting planes to which are secured outwardly and downwardly projecting planes. At the rear a horseshoe shaped section is connected to one of the horizontal planes.

Louis Bleriot, Neuilly-sur-Seine, France. 967,712, Aug. 16, 1910. Filed Mar. 25, 1909. RADIATOR for flying machine motors. A series of flexible sheets form a common wall for interconnected annular cups as a means for conducting water from the motor. Each cup is connected to two reservoirs, through one of which the water is admitted and through the other the water escapes in the circulation to and from the motor.

Romain de Bersaques, Washington, D. C., assignor to De Bersaques Safety Aeroplane Co., a corporation of South Dakota. 967,711, Aug. 16, 1910. Filed Aug. 14, 1909. AEROPLANE, a boat for chassis, wheels mounted on the boat, propeller shafts provided with screws at both ends and planes projecting from the sides of the boat pivoted thereto with means for manually raising or lowering the planes in unison. There is also a vertically disposed rudder and yielding fins projecting from the top and bottom of boat and frame.

Frederick H. Schluster, St. Louis, Mo. 967,571, Aug. 16, 1910. Filed June 24, 1909. AERONAUTIC SAFETY APPLIANCE. The object of this invention is to reduce the danger in learning to operate an aeroplane. A captive balloon is secured by guy ropes diverging to their ground anchorage. From a pulley attached to the balloon depends the heavier than air machine, the height of which is controlled by a travelling connection on one of the guy ropes. The extent of motion of the aeroplane depends on the length of rope and height of balloon, and the divergence of the guy ropes anchoring it.

John Wills Cloud, London, England. 968,127, Aug. 23, 1910. Filed Mar. 9, 1909. APPARATUS FOR AERIAL MACHINES, nautical ships, vehicles and other purposes. This invention has for object to balance two motors placed side by side so that the crank shafts will be parallel and geared together to run in opposite directions, and for the reciprocating parts to work oppositely in each engine to balance each other. Propellers are rotated by each engine.

Jacob H. Buss, Saltillo, Tenn. 968,120, Aug. 23, 1910. Filed July 2, 1909. FLYING MACHINE of the helicopter class, comprising propellers on vertical axes driven by gears from a motor and a propulsion propeller on a horizontal shaft driven by a friction disk splined to said shaft and engaging the plane face of the gear wheels. A shipper lever regulates the position and speed of friction disk.

Gerald Geraldson, Newcastle, Cal. 968,339, Aug. 23, 1910. Filed Jan. 14, 1909. AEROPLANE LAUNCHER AND LANDER. A tower having at the top two horizontal opposite branches in the form of a T is provided with a cable, for each side, on pulleys for raising and lowering. Each cable, intermediately of its ends is connected by means of a pulley wheel with a pneumatic element consisting of a cylinder and piston to serve as a cushion. The aeroplane is screwed to a releasable hook on the pendant end of the cable.

Julius Schulke, Jena, Germany. 968,700, Aug. 30, 1910. Filed June 4, 1907. FLYING APPARATUS of the ornithopter class, comprising propelling wings arranged in groups on the sides of car. The wings are of concavo-convex form, the concave sides remaining downward, while the outer tips have axially movable vanes so arranged that on the downstroke the vanes assume a downward slanting position to assist the forward propulsion. Valve flaps on the wings allow escape of air on the up-stroke.

Frederick B. Kummer, Sheboygan, Wis. 968,860, Aug. 30, 1910. Filed Nov. 22, 1909. FLYING MACHINE of the helicopter class with one propeller on a vertical axis and one a horizontal axis at the rear for propulsion. The latter is secured on a flexible shaft manually adjustable for steering.

Charles E. S. Burch and Frederick R. Burch, Seattle, Wash. 968,918, Aug. 30, 1910. Filed Oct. 5, 1908. FLYING MACHINE provided with vertical and horizontal screws, and at the upper extremity a parachute comprised of a plurality of rings secured about their outer peripheries to the framework.

NOTES FROM ABROAD

CHAVEZ MAKES MOST DARING FLIGHT OF HISTORY, SAILING OVER THE SIMPLON PASS TO ITALY.

Ends in Death.

DOMODOSSOLA, Italy, September 27.—George Chavez, the Peruvian aviator, who was injured in alighting after his flight over the Alps, died at 2.25 o'clock this afternoon.

Chavez, who was 23 years old, attracted attention first Aug. 3 last, when, at the Blackpool (Eng.) aviation meet, he reached a high altitude. Sept. 8, at Issy, France, he established a new altitude record officially determined at 8,403 feet. The accident which resulted in Chavez' death occurred Sept. 23 on his second attempted flight from Brig, Switzerland, to Milan, Italy, for a prize of $14,000, offered by the Italian Aviation Society of Milan. He was descending at Domodossola, and his machine was within thirty feet of the surface when one of the wings collapsed and the Bleriot monoplane fell in a heap, carrying Chavez beneath it. Both of the aviator's legs were broken, his left thigh was fractured, and it is supposed that he sustained internal injuries.

The start occurred at 1.29 P. M. At 1.48 came word from the monastery at the summit of the Simplon Pass that Chavez had passed above it at a height of 1,800 feet. At 2.19 P. M. the daring aviator landed at Domodossola, Italy, some 25 miles from Brig, after a long glide of 3,000 feet. Just before alighting, and when only about 30 feet from the ground, Chavez apparently started his motor again.

Weymann, the American aviator, in a Farman biplane, was the only competitor of Chavez, who actually made the attempt. He mounted to a high altitude several times, but was unable to reach a sufficient height, last Friday, to fly over the pass.

It was necessary for Chavez to attain a great altitude to clear the Simplon Pass, the summit of which rises 6,592 feet.

He maintained apparently this altitude, and followed over the road built by Napoleon in 1800 over the Simplon Pass. He accomplished the eight miles that brought him over the top of Simplon, and then sailed gracefully over the eighteen miles down to Domodossola.

Arriving at Domodossola, he had left the hardest part of his journey behind him, having escaped the high peaks and the jumble of rocky gorges on this side of the summit. The remaining distance to this city offers less difficulty, but takes the aviator over Lake Maggiore and a succession of plains to the goal.

The distance from Brig, Switzerland, to Milan is 93 miles by the course planned, and the prize was for the aviator who should make the first flight, starting from a tableland 900 feet above sea level at the head of the Rhone valley, near Brig, Switzerland. In addition to reaching a height that would bring him over the Simplon summit, and in doing which he must suffer severely from the cold, the aviator was required to guide his frail craft over wide chasms, notably the Gorge of Ysette, where a safe descent would be quite impossible, and an accident must mean almost certain death. Aviation experts had predicted freely that the only alternative to a successful flight across the Alps was the death of the aviator.

At the funeral floral tributes came from all parts of Europe, and thousands of peasants tramped down the mountain sides with arms filled with mountain flowers. One little girl laid upon the coffin a bunch of edelweiss that blooms alone amid the eternal snows of the Alps, bound with a ribbon on which she had written: "Gathered among the mountain peaks over which you flew."

LANDS IN STREET.

PARIS, Sept. 9. For the first time in the history of flying an aeroplane alighted in a public square in Paris, and though it was severely damaged, the possibility of such an event was fully demonstrated. The aviator, Parisot, rose in a Farman biplane with a passenger from the maneuvring ground at Issy-les-Moulineaux, and, after circling the Eiffel Tower, steered his machine so as to come down in the Esplanade des Invalides. He had nearly landed when he was forced to turn sharply to the right in order to avoid some carts, with the result that he collided with two lamp posts, which badly damaged the machine. Pending the framing of a decree which shall be applicable to the whole of France, the French Aero Club, acting on the suggestion of the Prefect of Police in Paris, has undertaken to caution aviators against landing in towns or urban areas.

ROZOY, France, Sept. 12.—Michel Mahieu flew 3 hours with a passenger across country.

NEW RECORDS AT BORDEAUX MEET.

BORDEAUX, Sept. 18. The last day of the meet saw several records fall. The new records are:

60 kil., 39 m. 32 2-5 s., by Morane.
70 kil., 46 m. 19 1-5 s., by Morane.
80 kil., 53 m. 5 s., by Morane.
90 kil., 59 m. 52 2-5 s., by Morane.
100 kil., 1 h. 6 m. 39 s., by Morane.
Record for 1 hour, 90 kil., by Morane.

Aubrun flew longest in one flight, 317 kil., in 3:15:30, on Sept. 16. Morane flew up to 2,100 m. (7,888 ft.).

DEATH OF POILLOT.

PARIS, Sept. 25.—In making his sixth flight of the day, with pupils, at the aviation school at Chartres, this morning, Edmond Poillot fell from a height of 90 feet. His backbone was broken, and he died in a few minutes without regaining consciousness. The passenger escaped with slight injuries. The aeroplane was a Savary.

200 MILES CROSS COUNTRY IN ONE DAY.

VINCENNES, Sept. 29.—Lieut. Bellenger, army officer, flew from the parade ground to inspect a suggested flying field at Sissone. From here he flew to Mourmelon in his army Bleriot, and visited with his friends. Towards evening he reascended for his return to Vincennes.

PLOCHMANN'S DEATH.

MUELHAUSEN, Germany, Sept. 29.—Plochmann, the aviator, who was injured when his biplane collapsed at a height of 150 feet, yesterday, died to-day without having recovered consciousness.

NEW WORLD HEIGHT RECORD.

MOURMELON, France, Oct. 1.—Henryk Wynmalen, the aviator, established a new world's record for altitude to-day, rising to a height of 9,186 feet.

The best previous mark, 8,403 feet, was made by the late George Chavez.

Wynmalen first attracted international attention on Sept. 29, when, at Bourg, he rose to a height of 7,854 feet.

13TH DEATH IN POWER MACHINES.

METZ, Germany, Oct. 1.—Aviator Haas fell and was instantly killed to-day while taking part in a distance competition from Treves to Metz.

Haas had covered about twelve miles when, from some cause yet unexplained, his machine dropped suddenly to earth in the village of Welle, on the Moselle river. The aeroplane was demolished.

It is a fact that the majority of deaths have been with biplanes.

COLLISION IN MID-AIR.

MILAN, Italy, Oct. 2.—The Antoinette of Thomas collided with the Farman of Captain Dixon in mid-air, smashing both machines. Thomas escaped serious injury, but Dickson sustained severe injuries.

(*Continued on page 188*)

IN THE AERIAL MARKET PLACE

TO OUR FRIENDS—We would appreciate it very much if you would specify in writing advertisers that you saw the ad. in AERONAUTICS. This will help us, and eventually be of equal service to yourselves.

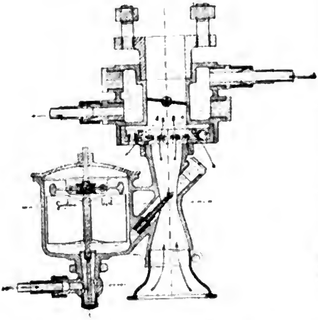
International Aeroplane Supply Co.

It is with much regret that AERONAUTICS was imposed upon to the extent of accepting an advertisement of the "International Aeroplane Supply Co.," of 1777 Broadway, New York. An advertising solicitor brought in the advertisement. Owing to pressure of business the contract was not verified, and the advertisement was inserted in the September number. A great mass of mail was the result. This solicitor represented himself to the agent of the building at 1777 Broadway as a member of this alleged company, and partially arranged for the renting of an office in the company's name. The agent turned over to the solicitor such mail matter addressed as had been received at the time.

Needless to say, the solicitor is not soliciting any more—at least, not for AERONAUTICS. If any money has been sent the matter should be taken up with the Postoffice Department.

Elbridge Co. Adopts G. & A. Carburetor.

The G. & A. Carburetor, controlled by A. J. Myers, 244 West 49th St., N. Y., has been adopted by the Elbridge Engine Co., as its work has been found most satisfactory on their two-cycle engines. The G. & A. carburetor is very flexible. A large number has been ordered by the United States government, after competitive tests on a 250 h. p., Jencick submarine engine. The speed range of the motor was from 80 to 1,200 revolutions. In another test, a National engine, could be slowed down to 70 revolutions. The G. & A. carburetor is the standard equipment on the Anzani and Otto engines, and the Aster, Aries, Adler, Delaunay, Westinghouse and other cars. It is also used by Santos-Dumont, Latham and Charles F. Willard.



Shelby Cold Drawn Steel Tubing.

Tubes for some few years have been used more or less as an experiment in aero work, but in the past two years there has been a widespread demand for them throughout the entire country on account of their special adaptability for this class of work that demands the maximum of strength with the minimum of weight.

The Peter A. Frasse Co. carry in their various warehouses in New York, Buffalo and Philadelphia, very large stocks, principally round sizes in from 1/16 in. OD to 5½ in. OD in various thicknesses of walls from 1/32 in. to ¾ in. Also carry a line of square sizes and some oval and rectangular shaped tubes.

They will exhibit at Belmont Park Meet October 22d to 30th, 1910, space No. 28.

Harkness Buys an Emerson.

Harry S. Harkness, who wishes it known that he is neither from California nor Cleveland, nor a millionaire, has a 150 h. p. six-cylinder, two-cycle Emerson engine in his shed at Mineola. Presumably he will use this engine in one of his Antoinettes.

W. L. Fairchild, another Emerson owner, has been making trials at Mineola with his monoplane, recently illustrated in AERONAUTICS. It is rumored that Curtiss is to try one of these engines. The Emerson engine is pronounced good even by competitors. Fairchild is enthusiastic over its performance.

Ball Bearings in Aeroplanes.

Here is a New Year resolution from the R. I. V. Co., of 1771 Broadway, New York.

"Showing the manufacturer and the individual buyer what a perfect ball-bearing is, looks like and works like; what precision in a ball-bearing means to every car, aeroplane or machinery owner, in dollars and cents, and what it means in reputation to a manufacturer of perfectly designed mechanism, cars or airships; of producing and marketing 'the best'; of backing up our claims by the fullest guarantee; of meeting our promises of delivery; of according the fullest business courtesy to customers and attention to orders; of generally increasing our business along the same conservative lines that has made R. I. V. respected, and of pleasing customers who appreciate quality, and conservatively extending credit of 10 to 30 days to those entitled to it."

Leading Vanderbilt Cars Carry Warner Auto-Meters.

The big Vanderbilt Automobile Cup Race proved another triumph for cars equipped with Warner auto-meters. Harry Grant's Alco, the winner, and the second, third and fourth cars carried Warners. One of the features of Grant's victory was his steady and consistent pace which was maintained from start to finish, giving him the new American road race average of 65 1/5 miles an hour. This steady pace is a silent testimonial of the value and accuracy of a Warner on a racing car.

The Warner also scored heavily in the Wheatly Hills and Massapequa races, the two minor events of the day. Eighty-three per cent. of the cars entered in the three races were equipped with Warners. The other 17 per cent. of the cars were divided among three other makes of speedometers. Every big race sees more Warners in use as they are the only speed indicators that can be depended upon by the big racing drivers.

Bicycle Champion Buys Aeroplane.

The Church Aeroplane Co., of Brooklyn, N. Y., is making a specialty of building complete aeroplanes, ready for the engine, both of standard designs, and built to order from working drawings furnished by their customers.

D. A. Kreamer, the ex-six day bicycle champion, has one of the Church biplanes, and has been making some very successful flights, towed by an automobile, and when 75 or 80 feet high, cutting loose and gliding several hundred feet to the ground.

Having gained considerable experience in handling the machine in this manner, he is now about ready to install an engine. The manufacturers received a very nice letter from Kreamer stating that he considered the workmanship to be very nearly perfect, and he was equally well pleased with their mahogany propeller built especially for his machine.

This company also built the Bleriot XI. monoplane, which is being used in James Montgomery's new play, "The Aviator." A monoplane similar to the Bleriot XI., but somewhat larger, is being built for Frederick Pearson, a Harvard student, and is now ready for the engine.

Another monoplane is under way for Mr. H. Wadsworth Longfellow of Boston, and will be on exhibition at the Boston February Show, and the manufacturers claim that this machine will be as well constructed and finished as the finest racing yacht.

The Church Aeroplane Co. is also prepared to furnish finished wood parts, such as struts, wing-bars, ribs, skids, etc., either plain, laminated, or hollow, in clear spruce, white ash, mahogany and bass wood. .

Also, cold rolled sheet steel fittings in drop-black, or nickle, and two types or aeroplane wheels.

They are handling the high grade "Paragon" propellers exclusively, and soon expect to have several of these on exhibition at their new factory, 123 Smith St., Brooklyn, N. Y.

This company has built a great many models of various types, some of them being furnished to the Harvard Aeronautic Society, Cleveland Aeronautic Society, Boston Y. M. C. A. Society, the International School of Aeronautics, etc., as well as the five foot model of the "Curtiss Albany-New York Flier," which the New York World now has on exhibition in the rotunda of the Pulitzer building.

Complete parts of every description for model builders and experimenters are carried in stock, and the variety of such parts is continually being increased.

Plans are well under way for a new type of aeroplane, which the Church company is about to put on the market, and Mr. Church, who designed the machine, has termed it a "monobiplane." Complete details of construction are not ready for publication, but the manufacturers expect to have this ready in the very near future. It is claimed that the new combination skid and wheel alighting device will be constructed in such a manner that it will be able to start and alight on very rough ground. This machine will also have a front and rear control, and a new device for lateral stability which is designed to be about 75 per cent. automatic.

Enters Aeroplane Trade.

The J. I. Case Thrashing Machine Company will compete with the Mitchell-Lewis Motor Car Company in the manufacture of aeroplanes. It will begin immediately, under the personal supervision of Lewis Strang.

The New Fabric, "Penacloth."

The Pennsylvania Rubber Co. has been experimenting for several months to secure a satisfactory fabric, has thoroughly tested the material now offered and believes that it far surpasses anything which has been produced heretofore. It is proofed with rubber and colored yellow to protect the rubber from the injurious light rays. Tested for durability, it does not deteriorate in sunlight as most rubber coated fabrics do.

The weight of "Penacloth" is 6 1/3 ounces per square yard. This is an ounce or two heavier than most fabrics which are now in use, but as the strength is a very important consideration. The strength of this fabric is phenomenal for its weight, being 130 pounds per square inch.

There has been a number of accidents lately which could be attributed to the tearing of fabric on the planes and it therefore seems that most experimenters will be looking for a stronger material. A fabric of this strength will help to hold the structure together in the same way that bracing wires do.

The width of this fabric is 40 inches.

The advantages of a water-proofed fabric are that it protects the wooden frame work from dampness and will not stretch, or absorb moisture and thereby increase its weight in damp weather. The added weight of this fabric over the ordinary material is quite inconsiderable, adding only about seven pounds to the total of even the largest machine.

Roebling Exhibit at Belmont.

At the Belmont Park International Aviation Tournament, the John A. Roebling's Sons Company will show their standard aviator cord. Samples of all sizes of both single strands and flexible cord will be displayed.

Roebling plated aviator wire will also be exhibited in sizes ranging from No. 10, B. & S. gauge, weighing 2.91 pounds per 100 ft. down to No. 21 weighing .227 pounds per 100 ft.

Insulated wires for use in airships and automobiles and specially constructed light wire ropes designed for use as emergency brake cables for automobiles will form another detail of the exhibit.

"Camasco" Adopted for Trade Name.

The California Aero Mfg. & Supply Co. have adopted the trade mark Camasco from the initials of the firm name, which will be used hereafter as a trade name for the monoplane, biplane, propeller wheel and other aeronautic specialties manufactured.

They report that work on a number of machines being built to order has taxed their facilities so that their own type, of Camasco machines, a monoplane and a biplane, will not be on the market for a month. A pleasing feature, however, is that several deposits have been made on this type, merely on the class of work being turned out on the former. Full descriptions of those machines will appear in AERONAUTICS.

They report also the sale of a "Loose monoplane" to Mr. Ed. Smith of Stockton, Cal. The Loose Monoplane Co. has given them large orders for ribs, spruce and ash, in special shapes. That trade is not alone local, may be judged from the fact that shipments have just been made of Camasco knock down planes, to New Zealand and Nome, Alaska.

A large stock of models and model supplies will be shortly installed.

Their large show rooms at 441 and 443 Golden Gate Ave., San Francisco, could be termed a good sized aero show, four full sized machines being at present on exhibition. A "Greene" aeroplane, veteran of many flights, two Loose monoplanes and a Demoiselle type, besides several gliders, aero motors and a large number of propellers, accessories, etc.

A "Visitors Welcome" sign throngs the place from opening of doors. It is the meeting place of all the local aviators, and all visiting enthusiasts are cordially invited to make it their headquarters.

Agencies have been secured for Naiad cloth, all makes of aero tires, Detroit Aeroplane Co. and Michigan Airship Co. motors, Paraborel propellers, Roebling aero cord, and many other specialties.

"Caveat Emptor."

That there is a special need for knowing the exact horsepower capable of being developed by an aeroplane engine, while not so necessary in the automobile, is claimed by Joseph Tracy, whose engine testing device has been installed in many of the large automobile factories, such as the Atlas, Continental, Simplex, Winton, Mercer, Moline and others.

In one certain specific instance an aeroplane engine sale would have resulted in greater economy for the purchaser had such sale been contingent upon test by an apparatus like the Tracy Dynamometer. The old business motto "Caveat Emptor" (Let the buyer beware) still has worth, although generally business ethics of some big concerns have made it almost obsolete. There are bound to be misrepresentations perpetrated upon the unsuspecting purchaser of aeronautic material, and it is no great trouble to keep this little advice in mind.

Biggest Propeller a Gibson.

The largest propeller ever made has been turned out by the Requa-Gibson Co. for a monster 2,200 pound aeroplane building in California. It is 14½ ft. in diameter.

A conversation with Mr. Gibson on various subjects relating to propellers brought out the following statement:

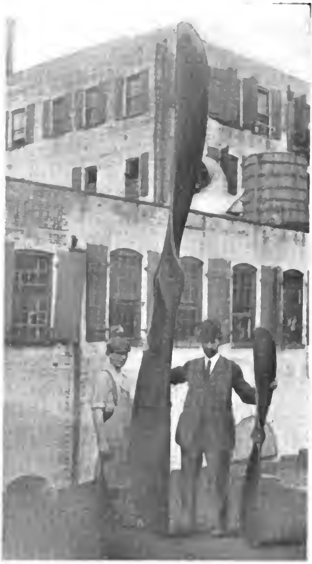
"We are employing a large force of men, specialists in this work, and by the use of many special devices, instruments, etc., combined with the extreme accuracy, resulting from our special process of manufacture, we succeeded in producing propellers, which were so accurate as to cause remarks from some purchasers, who have taken the trouble to check up the characteristics of the propeller, and compared them with the markings on the same propellers, and have found them correct in every instance. This is a very great thing to say.

"By the usual process of elimination we have resolved not to cater to the light weight craze. It costs the purchaser too much money, and the value of this course is shown in the fact that eight out of ten accidents, such as striking stones, sticks, wires, etc., do ruin an ordinary propeller, but are not sufficient to put ours out of business. We can repair them in a perfectly satisfactory manner. France has shown America the way in the building of automobiles, and so it is doing in aeroplane building. We, for our part, are willing to be shown, in some respect at least, especially in regard to finishing.

"We realize how much efficiency is lost by careless and incompetent finishing, and after spending considerable sums in securing the best possible results, our propellers have the appearance of being finished in a piano factory.

"We propose in 1911 to continue improving, and as we have been in the lead in this country in the past, so we propose to be in the future, and our reason for this optimism lies in the universal satisfaction so unstintingly expressed by every one of our customers except upon one point, delivery.

"Let this be our explanation and apology. We are endeavoring to produce the best, and having done so, we will in the natural course of events be rewarded by the support of those who appreciate that America to be in the lead must take just as much pains as our foreign competitors."



No Change in Naiad Cloth.

The C. E. Conover Co. at present do not expect to make any change in their cloth, as the kind they are now selling has proved so satisfactory they do not think it necessary to make any change. Among the manufacturers and others who have bought their cloth extensively are the following:

Aerial Navigation Co. of America, Aeronautical Supply Co., Auto & Aeronautic Supply Co., California Aero Supply Co., Hamilton Aero Mfg. Co., C. & A. Wittemann, P. Brauner & Co., Burgess Co. & Curtis, Detroit Aeroplane Co., Elbridge Engine Co., Harvard Aeronautical Society, Scientific Aeroplane Co., Fred Schneider, Glenn H. Curtiss, Dr. H. W. Walden, Chas. J. Strobel, H. C. Gammeter, H. W. Gill, Chas. K. Hamilton.

Loose Monoplanes.

The Loose Monoplane Co. believes that for the present and for some time to come the machine which is and will be in the greatest demand is the small monoplane to carry one person. The Loose monoplane is built ready for the motor and propeller. It is designed to carry 5 pounds per square foot, but is only called upon to carry 3 pounds per square foot. Not so large that it requires a 50 foot hangar to house it in and not so small that the aviator is crowded and uncomfortable while in flight. It is a matter of less than half an hour for one man to remove the planes after which it can be housed in a hangar 8 feet wide by 25 feet long. In short the Loose monoplane is in a distinct class by itself—a machine larger than the "Demoiselle" and smaller than the "Antoinette," designed to fly with about 160 pounds thrust from a motor of 20 to 30 horsepower.

The fuselage is of triangular construction, making the most rigid machine of this type that could possibly be built. Oak, spruce, and ash are used besides steel tubing, making a machine of durability. It has also been kept to the acme of simplicity throughout and where the vibration of the motor has a tendency to loosen a nut there are split pins, making reliability a third point in the construction. A big skid track is of great benefit in landing by keeping the planes well off the ground.

One of these machines has been purchased by E. H. Smith of Stockton, Cal., who has ordered a 20-30 opposed Detroit motor.

Hartford Tires Have Big Demand.

It is surprising, even to aeronautical publishers, to learn that it is not uncommon for the Hartford Rubber Works Co. to receive several orders for 50 to 100 pairs of aeroplane tires at one time, but such is the statement made by this company whose patrons include Wright Bros., Curtiss, Hamilton, Johnstone, Willard, Burgess, Brookins, Curzon and others. The line for 1911, which includes the single tube tires, Aviator, Aeroplane and Aeronaut brands, will not be changed.

Ferdinand Bayer, 104 West Main St., Gainesville, Fla., wants to correspond with manufacturers of and dealers in materials for construction of aeroplanes, airships, etc.; material to include steel, aluminum and engines.

First 1911 Elbridge.

The first 1911 Elbridge engine has been assembled and it was found to weigh, with all required fittings, 155 pounds for 40 horse power rating. It is expected that the engine will give at least 10 per cent. more power.

A very large percentage of the successful flights by novices during the past month were made with Elbridge engines. On one day at Mineola recently with five men in the air, three of them were flying with Elbridge engines. A partial list of the men who have made flights at Mineola this summer with Elbridge engines shows that the trick has been done by Dr. William Greene, J. J. Frisbie, Bud Gaskell, George Russell, F. E. De Murias, Joe Seymour, Henry C. Cooke, Charles Willard, Chester Kaufman, Wilson Post and others. The distances varied from try-out jumps of a few hundred yards to cross-country flights of many miles.

New Rotary Oil Pump.

The Pedersen Manufacturing Company, 644 First Avenue, New York, besides their well known mechanical lubricators, are now offering a new small rotary oil pump, that on account of its small size and light weight is especially adapted for aeroplane engines. The construction of this pump is very simple, consisting of only two moving parts, but the pump has considerable lifting and discharge power.

Several types of these pumps are made, the one illustrated in full size being the No. 2 pump, which has means for regulating the amount of oil pumped, so that this pump in itself constitutes a complete regulatable oiling device.

This pump consists of a casing with an enlarged end bore, a shaft fitting in same and having a cross slot at its largest diameter, in which slot fits a piston or slide, with lugs on each end. In rotating the shaft, the slide rotates with same, and the lugs by coming in contact with the taper screw placed eccentric in the head or cover of the case is given a lengthwise movement in the slot. The regulation is obtained by varying this movement, which is accomplished by the taper screw, as when this screw is at its extreme inward position the slide has its greatest movement, and vice versa.

The movement of the slide takes place when it is opposite the suction and discharge ports, and as the movement is toward the outlet port, oil is drawn in at the suction side, and confined between the wall and the piston during the rotation. When the reverse movement of the slide takes place, this oil is forced out through the discharge port, and at the same time a new charge is taken in at the suction end. This is repeated as the shaft revolves.

These pumps can also be used in connection with single or multiple sight feeds.

New Bretz Office.

The J. S. Bretz Company have just opened up a complete western office and salesroom at No. 1215 Woodward Avenue, Detroit, Mich. The suite of offices occupies the whole of the second floor of a new two story brick, stone and plate glass building that was erected especially for automobile use in the heart of the automobile district. H. J. Porter and J. W. Hertzler, the western sales representative of the J. S. Bretz Company, will make their head quarters at the new address, and show a complete line of F. & S. Annular ball bearings, German steel balls, U. & H. master magnetos, and Bowden wire.

Bosch Magnetos at Berlin.

In the Berlin aviation meeting held last August, Bosch magnetos were used on 27 machines, including Farman, Sommer, Wright, Euler, Grade, Farman, Aviatik, Voisin, Antoinette and Behrend. Six different types of Bosch magnetos were employed. There are still two more types used in aeronautic work.

AERONAUTICS AND WAR

[*Continued from page 166*]

making such a vessel, practically as they do to-day, silk, linen and cotton cloths, goldbeater's skin, linseed oil and even solution of rubber. Attempts, however, to make balloons for the purpose of demonstrating in the lecture room the lightness of the gas proved failures. Seventeen years after this important discovery of hydrogen, it remained for Montgolfier, in 1782, to be the first to bring about that collocation of materials necessary for a successful balloon.

Montgolfier began his experiments by using hydrogen as the lifting power. This he inclosed in small silk bags and in small thin paper bags, which easily rose to the ceiling and higher, but which would remain in the air but a very short time owing to the porous character of the materials used in their construction.

Had Montgolfier at this stage turned his attention to the question of making the envelope impervious, as was afterwards done by Charles and Robert, he would have produced then and there the balloon. But instead of doing this, he sought for a new lifting power, and he turned his attention to smoke. During a visit to Avignon he procured a silk bag of about 40 cu. ft. capacity and upon burning paper in the mouth of this bag, when inverted, it rose rapidly to a height of about 75 feet.

[*To be continued*]

CLASSIFIED ADVERTISEMENTS

FOR SALE—New 4-cylinder Climax engine. Weight, 110 lbs., 25 h. p., $125.00. Will ship C. O. D. on receipt of $25. Address L. WESTLEY, 2733 Dupont Ave., So., Minneapolis, Minn.

TYPEWRITERS—All makes. Caligraphs $6.00; Hammond, Densmore $10.00; Remington, $12.00; Oliver $24.00; Underwood $30.00. 15 days' free trial and year's guarantee. Harlem Typewriter Exchange, Dept. F, 18, 217 West 125th St., New York City.

BACK NUMBER WANTED—Will pay $1.00 for copy of AERONAUTICS of May, 1910. Address A. C. A., care of AERONAUTICS.

MOTOR FOR SALE—One 35 h. p. water cooled motor that has made an 800-pound aeroplane fly (but for which building a 50 h. p. motor same design). Good as new. Gives 260 pound thrust. Weight 165 pounds. Condition guaranteed O. K. Should be used on and abundantly ample for 600 or 700 pound machine. Price, $500. Write quick if wanted. Address Box 188, 6th and Broadway, Monett, Mo.

FOR SALE—One pair Pennsylvania wheels and tires 20 x 4 in. Am placing axle-type wheels on new aeroplane and wish to dispose of these fork-type wheels used on previous machine. Will take but little less than cost price as they are entirely new. Address E. C. Marble, 98 Market St., Chicago, Ill.

INVESTORS' OPPORTUNITY—New mechanical combination cyclonic lift and power glide for practical flying, commercial prospects.

Latest, greatest, safest, most perfect and remunerative cycloplane proposition ever offered investors. Address C. B. Melott, Yonkers, N. Y.

MOTORS—8-cylinder "V," 30-40 h. p. Early deliveries. Prices moderate. Hudson-Fulton Auto Co., 247 West 47th St., New York.

ADVERTISER desires backing to learn practical operation of aeroplanes. Will give security and interest in future operations, if desired. Details to responsible party on request. R, care AERONAUTICS.

THE AMERICAN SCHOOL OF AVIATION CORRESPONDENCE COURSE.—A thorough technical as well as practical training in Aviation for all; aviator, inventor, designer, manufacturer, athlete, traveler, etc. Practice is provided upon the best aeroplanes, and will not interfere with other occupations.

Write for particulars

M. K. KASMAR, Secretary,
1952 North Avenue,
Chicago.

NEW BLERIOT XI monoplane latest type quantity of spare parts, $2,600. Duty can be satisfactorily arranged. Owner leaving for France. Hamer, 128 Bishop St., Montreal, Can.

FOR SALE—Demoiselle type monoplane; guaranteed to fly; ready for immediate shipment. Blue prints and instructions for building monoplane, $1. Write for prices to J. Horat, Lafayette, Ind., manufacturer of aeroplanes to order.

FOR SALE—Patent and license for two of the best kites made. (1st) the exclusive license to make, use and sell kites smaller than 36 in., under Patent No. 698,634, known as the "Conyne Kite," the "King of Aerial Advertising." (2nd) Patent for sale outright for one of the cheapest made, most durable, best flying, light wind kites. Any manufacturer, with these two kite patents, would almost be able to control the toy kite market of the United States. He would be in the same position that I am in the aerial advertising business.

Get busy. There is big money in it.

For information,

SILAS J. CONYNE,
3508 McLean Ave.,
Chicago.

FIRST-CLASS Machinist and Tool Maker would like position with party engaged in air craft construction. Student of the Y. M. C. A. aeronautical course. Now building own machine, including engine; 15 years' experience in different branches of mechanics.

FRED'K CRIBIER,
299 N. 5th St., Newark, N. J.

MAN WITH EXPERIENCE in heavy gliding models would like position with reliable parties in aeronautics. Valuable lateral stability device as an inducement for good position. Wesley Emmes, L. B. 37, Peterboro, N. H.

HOLBROOK

Aerial Motors and

Propellers

35 H. P. **50 H. P.**

4 Cylinders, 4 Cycle, Water Cooled

We are going to sacrifice four of these motors as an advertising medium

Write for terms

Holbrook Aero Supply Co.

Joplin, :: Mo.

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Aeronautical
Society

OFFERS REAL BENEFITS

All interested in the Art will be benefitted by becoming members.

DUES: $10 Per Annum

No Initiation Fee

¶No other Association in the world has accomplished as much.

¶If you desire to learn what the Society has done for the Art in the last eighteen months, send for the brochure reciting the accomplishments from the formation of the Society in July, 1908, to December, 1909. It is practically a history of aviation in the U. S. during the above period.

¶For the purpose of increasing the sphere of usefulness the membership should be augmented. Every additional member advances the general good.

Address the Secretary for booklet and application blanks at P.O. Box 28, Station D, New York; or 1999 Broadway, where weekly meetings are held.

¶The Aeronautical Society offers the courtesy of its grounds at Garden City, L. I., to all who are desirous of qualifying for pilo's' licenses of the American Aeronautical Federation. Write directly to Secretary, American Aeronautical Federation, 170 Broadway, N. Y. City.

CLUB NEWS

Gordon Bennett Balloon Trophy

The **United States Aeronautical Reserve** is the latest aero organization, and it bids fair to rapidly become the greatest in this country.

Since the actual recruiting work began at the Boston meet 3,200 citizens joined the association, so it has been announced.

It was started by John Barry Ryan. The Reserve is planned to be a nation-wide association of aeroplane inventors, professional and amateur aviators, designers and builders of aeroplane engines and other aerial equipment, army and navy officials prominent in the regular service and in the militia of the states, financiers, statesmen, newspaper men, sportsmen, and hundreds of others interested in aeronautics, from President Taft down to the humblest aeroplane mechanic—and all banded together to advance the aeroplane as a war engine, to make of it something better than a mere exhibition toy, and of its aviators something besides air chasers of prize money.

There will be captains for each of the states and territories in the Union.

Headquarters have been arranged by Mr. Ryan in the old Lenox mansion, northeast corner of Fifth avenue and Twelfth street, New York, which is being overhauled and refitted for the purpose.

One important feature will be the library. It is planned to have as complete a library of old and current books and journals and data of all kinds as is possible—something needed greatly in this country.

It is expected to swell the membership to 50,000 members by January 1st.

The qualifications necessary to membership are: active member, viz.: Any aviator qualified as such, initiation fee one dollar, annual dues two dollars; apprentice member, any individual interested in aviation, initiation fee one dollar, annual dues one dollar.

For further information address Richard R. Sinclair, general secretary, 53 Fifth avenue, New York.

The **National Association for the Promotion of Military Aeronautics,** formed in Washington, D. C., some weeks ago among officers of the National Guard of the District of Columbia, by Captain Charles J. Fox, commanding First Battery, Field Artillery, N. G. D. C., has discontinued its existence as an organization and its members have joined the United States Aeronautical Reserve. The association was formed along the lines of the National Association for the Promotion of Rifle Practice, and its object was to promote aeronautics as a branch of military science.

Many officers of the National Guard of the District had joined the association and it was planned to make it national in scope, with Washington as a headquarters and a national aerial maneuver ground and camp of instruction in aeronautics at College Park.

When Commodore John Barry Ryan, of the United States Aeronautical Reserve visited Washington and succeeded in actively interesting officers of the Army and Navy, in his national organization, the members of the Washington association, at a special meeting, decided that they could best promote the objects of the National Association for the Promotion of Military Aeronautics, by joining the larger body.

Captain Fox called upon Commodore Ryan in Washington, and the organizer of the United States Aeronautical Reserve said he would welcome the District Guardsmen in the Reserve.

A large number of officers and enlisted men of the National Guard of the District of Columbia have joined the Reserve, and they hope to establish at the National capital an aerial manœuver ground, where experiments in aerial tactics can be worked out.

Prominent among the District Guardsmen, who joined the Reserve, is Colonel Charles H. Ourand, commanding the First Infantry, N. G. D. C., who years ago drew many of the designs for the machines used by Professor Langley in his experiments on the Potomac in mechanical flight.

The **Aero Club of St. Charles College** has been formed at Helena, Mont., where Mars has been flying. J. C. Mars was elected president.

The **Aeronautical Society** was addressed by its president, Hudson Maxim, on Oct. 13th, the subject being "Some New Discoveries in the Constitution and Dynamics of Language." L. E. Dare gave his experiences during his tour with a model exhibition over the country.

On Sept. 22, Lieut. Frederick E. Humphrey, late of the U. S. Signal Corps, lectured on the subject of "The Value of the Aeroplane to the Signal Corps in Time of War."

The **New Jersey Aeronautical League** has been started at the Guttenberg race track, N. J., for the promotion of aeronautics in that state, by about thirty members.

At the last meeting about ten more members were proposed. There was a model aeroplane exhibition at the Guttenberg Motordrome, under the auspices of the League on October 4th.

The officers of the League are as follows: Mr. A. Ermetti, president; Mr. C. Christianson, vice-president; Mr. J. E. Ring, treasurer; Mr. W. A. Kraus, secretary.

ASCENSIONS.

ALTON, Mo., Sept. 27.—John Berry, George S. Milnor and Miss A. Lan with made an ascent. After making an intermediate landing Berry took up five children.

TOPEKA, Kan., Sept. 30.—The balloon Topeka made a short flight, reaching an altitude of 8,200 feet, and landing at Meriden, 12 miles away. E. S. Cole acted as pilot and H. W. Jacobs, president of the Western Aero Club, made his initial flight.

HAMILTON, O., Sept. 28.—The balloon Drifter, with Albert B. Holz of the Holz Balloon Company, Cincinnati, as pilot, and Louis and Charles Troutman of Hamilton as passengers, left its moorings on its eighth trip this morning at 10:45 o'clock.

DAYTON, O., Sept. 20.—E. B. Weston, pilot, Leo Stevens and Clifford B. Harmon, passengers, started from Buck Island at 11.40 A. M. and landed at 5 o'clock at Washington Court House, Rattlesnake Gulch.

DAYTON, O., Sept. 22.—Another ascension was made on Thursday in the balloon "Cleveland," Leo. Stevens, pilot. Passengers, E. B. Weston, G. J. Needham, Dr. J. C. Eberhardt, and Dr. L. E. Custer.

Mrs. C. B. Harmon acted as pilot in the "Delight," Mr. Weston's balloon, with Ralph Devoe and Mr. Harmon passengers. Both balloons landed about 25 miles from Dayton, at Clinton, O., and both covered about the same distance in the time space of 3 hours.

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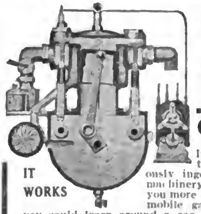

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I give you this wonderful model absolutely free. Not a toy, but a marvelously ingenious piece of machinery that teaches you more about the automobile gas engine than you could learn around a car or aeroplane in years. Every part is there, and it actually works. The piston goes through the complete cycle, operating the valves by means of the crank shaft and the half time gears exactly like a full-sized engine. Equally practical models of the magneto and carbureter also given free. You can

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First Auto Supply Man in America

RECORDS
made by Wright Aeroplanes with
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as sole and standard equipment

ALTITUDE, 6175 ft., Walter Brookins

CROSS-COUNTRY, 175¾ miles in 5 hrs. 51 minutes, Walter Brookins (world record)

DURATION, 3 hours, 5 minutes, Ralph Johnstone

SLOW SPEED, 22.82 m. p. h., Walter Brookins (world record)

ACCURACY, 5 ft. 4 in. from mark, Ralph Johnstone (world record)

SHORT CIRCLE, 5½ secs., Walter Brookins (world record)

SUSTAINED CROSS-COUNTRY FLIGHT, 97 miles, Arch Hoxsey

BENZ car with **MEA,** winner in **Gaillon Hill Climb,** 97½ miles p. h., 8% grade

Standard High Tension Equipment of the German **Mercedes**

Marburg Brothers
1777 Broadway
New York

AVIATION WEEK
Space 26, Belmont Park Exhibition

ETEVE STABILIZER

(Continued from page 151)

The preliminary attempts were made in order to verify the equilibrium of the modified aeroplane, which machine was placed at the disposal of Captain Eteve by General Roques, engineer-director. After having made some flights at Pau in company with M. Tissandier, Captain Eteve, beginning with the 4th of May commenced operations, first demonstrating the correct operation of the stabilizer when running on the ground; next making flights of 500 and 600 metres with turns on the 7th of May, and following with flights of 3 and 10 minutes on the 9th. On this day, the fact that the ordinary Wright can be readily controlled, was demonstrated. The operation of the depression rudder was found to be considerably simplified, and in spite of the large surface of the depression rudder of the Wright machine, the stability was such that the apparatus frequently remained in equilibrium for some minutes without the intervention of the pilot.

On the 12th and 13th flights of 31 and 17 minutes duration were made, and on the latter day a height of 30 metres with a figure 8 turne was attained. On the following day an 18-minute flight outside of the Saint-Cyr polygon, while on the 20th a flight of 8 minutes with the apparatus out of transverse equilibrium was made.

FOREIGN LETTERS

(Continued from page 180)

MORANE HAS ACCIDENT.

PARIS, Oct. 5.—Leon Morane, with his brother Robert as a passenger, attempted to win the Michelin prize of $20,000 for a two-man flight from Paris to Puy-de-Dome, a mountain 4,800 feet high, near Clermont-Ferrand, but fell near Boissy and broke one leg. His brother was badly injured. The machine was a 100 h. p. Bleriot.

FLEW 261 MILES CROSS COUNTRY IN 5 HOURS.

Henry Weymann, the American aviator, on Sept 7 nearly won the prize. He got within 12 miles of the finish when the time limit was up. Several landings were made, and his journal lasted in all 7 hours, of which he was actually flying 5 hours 1 min., maintaining an average speed of 40.8 m. p. h., in his Farman machine. A record for cross country flying in one day, for either one or two men.

The conditions of the prize demand the trip to be made in 6 hours alighting on top of the mountain after circling the cathedral of Clermont-Ferrand 5 miles from the mountain.

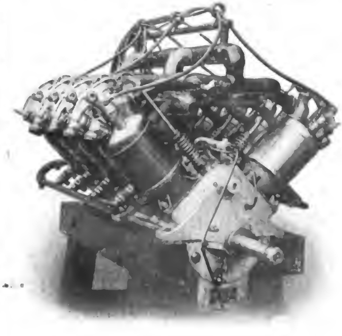
ARMY OFFICER DIES IN AEROPLANE.

ST. PETERSBURG, Oct. 7.—Capt. Macievich the Russian military aviator, was killed in a fall from a Voisin biplane. The accident occurred during an altitude competition, which was won by Lieut. Matyevich, who reached a height of 3,937 feet.

Macievich had risen 3,930 feet but decided to descend. When at a height of 1,640 feet his machine suddenly upset, and the aviator was thrown out. Every bone in his body was broken with the exception of an arm. It is the belief of physicians that he died of heart failure before reaching the ground. Loss of control of a lever is supposed to have been responsible for the accident.

It is reported that 120 Bleriot aeroplanes have been ordered by the French government.

At Garden City, L. I.



IT WAS WITH A

RINEK

50 H. P., 8 Cylinder Engine

THAT

PHILIP W. WILCOX

President Aero Club, Columbia University

On Sunday, Aug. 14, 1910

FLEW On first attempt, making a complete circuit of the Aviation Field, at an average height of from 75 to 100 feet. The aeroplane was of the Farman type, and the speed estimated was about 40 miles per hour. Mr. Wilcox has since been making almost daily flights, duplicating the above.

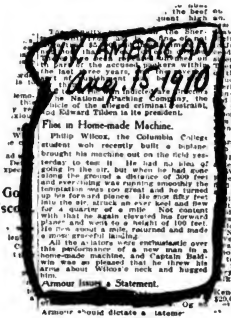
RINEK Engines have within the past month or so come rapidly to the fore, and are to-day admitted by experts as second to none for aviation.

Successful Aviators Know
+++++++ Their Value +++++++

Any doubt you may have as to the *Superior Qualities* of the *Rinek Engines* must be dispelled after consideration of the fact that they are amongst the very few which have been found *"All There,"* under the severest flying conditions :: :: :: :: :: ::

TYPE B-8, 60 H. P., weight, 275 lbs. complete

TYPE B-4, 30 H. P., weight, 130 lbs. complete



N.Y. AMERICAN
Aug. 15, 1910

the National Packing Company, the vehicle of the alleged criminal restraint, and Edward Tilden is its president.

Flies in Home-made Machine.

Philip Wilcox, the Columbia College student who recently built a biplane brought his machine out on the field yesterday to test it. He had no idea of going in the air, but when he had gone along the ground a distance of 300 feet and everything was running smoothly the temptation was too great and he turned up his forward planes. He shot fifty feet into the air, struck an even keel and flew for a quarter of a mile. Not content with that he again elevated his forward planes and went to a height of 100 feet. He flew about a mile, returned and made a most graceful landing.

All the aviators were enthusiastic over this performance of a new man in a home-made machine, and Captain Baldwin was so pleased that he threw his arms about Wilcox's neck and hugged him.

Armour Issues a Statement.

Phenomenal Efficiency **PROPELLERS** Finest Material and Workmanship

THE RINEK AERO MANUFACTURING CO.

EASTON, PENNA.

000 Foot Racing Balloon

IN STOCK

ALSO ONE OF 40,000 FEET

Write quick and get in the big races this Season—both National and International, and others :: ::

Largest in America—testing with Air

Our Balloons have won every contest against all makes—here they are:

CHICAGO—9 Competitors—Won both Distance and Endurance trophies by a big margin.
INDIANAPOLIS—6 Competitors, 1st and 3rd prizes.
PEORIA—3 Competitors, 1st Prize.
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CAN YOU BEAT THAT!

How we do it: by using the very best material in the country; building on safe, practical lines, with good workmanship.

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H. E. HONEYWELL, Director

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Vol. VII DECEMBER, 1910 No. 6

AERONAUTICS

THE AMERICAN MAGAZINE
OF AERIAL LOCOMOTION

PRICE 25 CENTS 41st ISSUE

WILLIAM EVANS OF KANSAS CITY—In Greene Biplane With Elbridge Engine

After practising one day Evans made a public flight of nearly 30 miles cross country from Overland Park. Two weeks later he entered a match race against Captain Baldwin for a purse offered by the Kansas City "Post." Evans' is the longest flight ever made by a novice.

ELBRIDGE ENGINE COMPANY

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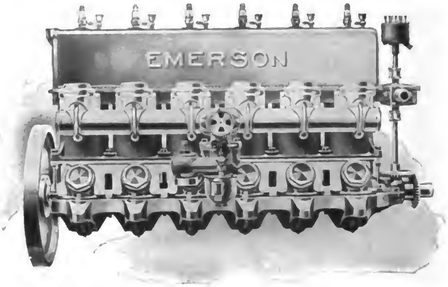

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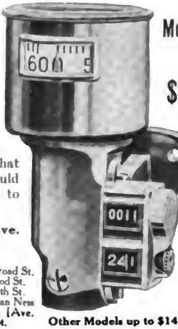

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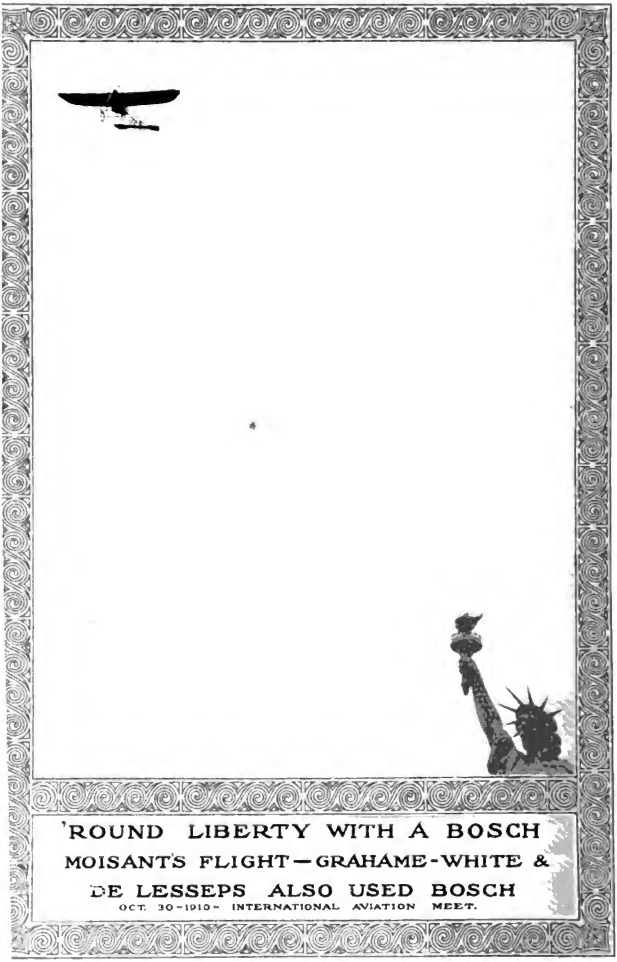
'ROUND LIBERTY WITH A BOSCH
MOISANT'S FLIGHT—GRAHAME-WHITE &
DE LESSEPS ALSO USED BOSCH
OCT. 30-1910- INTERNATIONAL AVIATION MEET.

The Gordon-Bennett Cup was won by Grahame-White. The fastest time was made by Blanc, both in Bosch Equipped Bleriots. Hamilton's Hamiltonian and Latham's Antoinette also Bosch Equipped. All Curtiss and Curtiss type, all Bleriots, the Farmans, the noiselles and Latham's 50 H. P. at the International Meet used Bosch Magnetos.

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Aeronautics

No. 6

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AERONAUTICS AND WAR

By Lieut.-Col. W. A. Glassford.

SIGNAL CORPS, U. S. ARMY.

(Continued from the November number)

The success of this experiment induced Montgolfier to repeat it on a much larger scale, and on returning home to Annonay he constructed a large globular envelope of coarse linen, lined with paper, and about 30 ft. in diameter. On burning chopped straw within this envelope it swelled and exerted a lifting power of several hundred pounds.

A short time after this experiment a public exhibition of its power was given on the 5th of June, 1783, on which occasion the balloon rose to an elevation of more than a mile, but remained in the air for a few minutes only, descending gently to the earth about a mile and one-half from the place of ascension.

The particulars of this experiment soon reached Paris, where a few persons became eager to repeat it. A subscription was raised to defray the expenses and the construction of a balloon was confided to the brothers Robert under the supervision of Professor Charles. It was at first intended to imitate throughout the experiment at Annonay, but Professor Charles advocated the use of hydrogen, which, of course, necessitated an impervious envelope. The brothers Robert had already been experimenting with solutions of caoutchouc for making cloth impermeable and this was used on the present occasion to render the envelope capable of holding the gas.

The balloon was a small one of about 13 ft. in diameter. It rose from the Champ de Mars Aug. 27, 1783, surrounded by innumerable spectators, to a height of 3,000 ft., and remained in the air for three-quarters of an hour, settling to the earth in a field about 15 miles from Paris, where the peasants of Gonesse, who took it for a monstrous and diabolical animal, attached it with shotguns and pitchforks. According to the local priest its wounded body exhaled a nauseous and characteristic odor. The collapsed bag was finally tied to the tail of a horse and dragged over the roads until there was nothing left of it.

Among the enlightened people of the cities the enthusiasm was unbounded. Hundreds of thousands of people, undaunted by pouring rain, flocked to witness, on a later occasion, the imposing spectacle of a globe rising in the air in artificial flight and carrying passengers. The first balloon to carry passengers was of the Montgolfier type and Pilatre de Rosier the first aeronaut. The general excitement soon had its effects on the fashions. Hats, both ladies' and gentlemen's, took the form of balloons, and garments in general followed suit, as far as compatible with the human shape.

Two kinds of balloons suddenly became practicable, each working on a somewhat different principle from the other. It is said that Montgolfier was not yet aware of the true principle of the ascensional force of his balloon. He seemed to think it was due to some kind of gas lighter than air which was generated by the fire; it was later that the true principle, viz., the expansion of air by heat, became understood.

The balloon soon assumed the shape of a sphere, on account of this form being that which gives the minimum weight of envelope for a given volume. Let us now consider for a moment this spherical balloon with hydrogen as the lifting power. We will suppose ourselves to be in the basket of a balloon and that we are ascending and drifting along in the atmosphere. As we go up, the air becomes lighter and there is less air above to press down, the pressure of the atmosphere becomes less and there is a corresponding expansion of the hydrogen in the balloon. The gas in the balloon, which follows the same laws as the air outside, expands correspondingly to the diminished pressure of the air, and if the balloon has been completely filled on starting, some of the gas must now escape, as otherwise, its expansion will soon cause the bag to burst through internal pressure, and then a catastrophe would be at hand. It is therefore customary to leave an opening in the lower part of the balloon for the escape of expanding gas. We are, then, losing gas as we rise and will continue to rise to a height where the weight of the balloon and what it carries equals the difference in the weights of the gas and of a bulk of air equal to that which the gas displaces. When we arrive at this point there is equilibrium, but only for a moment. We are now, so to speak, weighing ourselves in a balance more sensitive than that used in a chemical laboratory; but what with the defects of construction of the envelope and of the diffusion through the lower opening, the balloon is losing gas at all times. The balloon, therefore, now begins to sink and will continue to do so until we lighten it by throwing out

(Continued on page 212)

THE AEROPLANE ENGINE FOR 1911

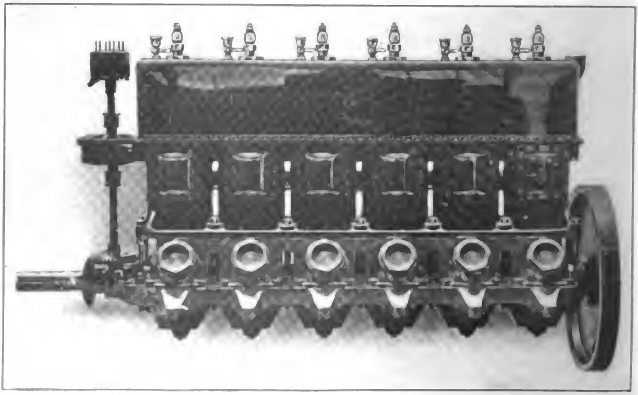
By Anthony H. Jannus.

IT is a great mistake in this age, when wonders develop into realities so quickly, to expect the ideal without giving the necessary time for development. This tendency is manifested by those seeking to solve their engine problem by searching the market for gas turbines, light and wonderful steam turbines, explosion engines using higher explosives than gasoline and the like. It seems reasonable to assume that the limitations of the present types of gasoline engines and the possibilities of better combining their acknowledged good qualities offer an extremely wide field to which many can turn who are expecting the undeveloped to blossom into instant utility. That it is possible better to combine the best in gas engine development should certainly be granted. The 4-cycle stationary cylinder engine is regarded as the height of conservative gas engine development. Let us then consider those of its faults which are obviously remediable. The rotating cylinder engine has unquestionable merit, but by a comparison of the consumption of fuel, oil and labor necessary to keep the present very fragile specimens in good order, it does not yet seem to have solved the problem. It may well be said, to the detriment of the above statement, that the rotating cylinder engine, and one might as well say the Gnome, holds practically all records. This does not, however, prove it superior to the aeroplane engine of 1911 as you shall see. Neither would it be wise to predict the early defeat of the Gnome in aeroplane competition, with machines equipped with other engines, as much depends on the plane and operator.

A 4-cycle gas engine involves two valves for each cylinder, with at least one of these mechanically operated. These valves require the utmost consideration in the construction of cylinders, crank-case and water-jacket. In addition to this they must be driven and must not get out of adjustment. Obviously a steam engineer suggests ports as the simplest solution, but this also involves complications, not so much in constructing as in correct functioning. The valves must have seats, usually cast integral with the cylinder. They must not prevent too much of the head of the cylinder from being cooled and their springs and adjustments must be accessible. The operation of these valves must be accomplished with a shaft running only half as past as the engine and with attendant gears for this reduction in speed. These valves must, in their operation, have some retarding effect upon both the intake and the exhaust as they are invariably smaller than the diameter of the cylinder. The whole process of giving these valves time to perform their individual functions must result in but one explosion to every four sweeps of the piston, making it necessary for a flywheel, or other cylinders, to hammer it back and forth for three cycles. The amount of power lost by this idleness for three cycles is only commensurate, however, with other losses in light, high speed, high-powered gas engines now doing aero duty.

The lubrication of the best 4-cycle engines seems still to be quite a problem as the amount, quality and receptacle for the lubricant involves weight and usually apparatus, such as pumps, pipes and gages, which may get out of order. The irregularity of the pressure on the pistons during each of the four cycles involves much waste of oil during the three idle cycles (so called as they are not driving the shaft) to insure sufficient oil for the explosion cycle. This is so markedly evident in the rotating cylinder gas engine where centrifugal force magnifies oiling troubles, as to be chief among its disadvantages. A system of oiling then that is directly dependent upon the fired mixture only, and not upon the number of revolutions of the engine, would seem a certain solution of this waste oil proposition, with its attendant carbon forming and ignition troubles.

Cooling by water has at present so many advantages over the air-cooling systems that it seems worthy of the most careful consideration. Many ingenious methods of jacketing cylinders have been devised such as the copper-jacket of the Cadillac automobile engine, the brazed jackets of the Curtiss aeroplane motor, and others, and many very difficult forms of cast jackets. All of these methods have had the valves as the chief obstacle in the road of uniform cooling of the cylinder walls and head. Where cast jackets are used great weight is involved in corners and crevices around the valves resulting in uneven temperatures of the valve seats and cylinder walls. A network of water pipes and joints is one of the most noticeable things on an 8-cylinder "V" type engine and water leaks are also frequent. One jacket for all (or for each group of four in the "V" type) would be the thing were it not for the valves and for the difference in vibration of the cylinders. True,



this last objection could be overcome by casting the cylinders en bloc, but that involves too much weight for the base and in the fillets at impossible corners of a cast jacket or too many leaks around the valves of one that is fastened on. This, however, would be ideal were it not for the valves, manifold, and the like.

The objections, briefly, to the accepted type of 4-cycle stationary cylinder engine are air cooling with its attendant reduction in power, the valves, the uneven torque, the oiling mechanism and reservoirs, the uneven jacketing, and the weight and intricacy of pipes and joints for the water circulation. Nothing has been said of carburetion and ignition as the development in these lines has been rapid and consistent.

Now in crystalizing these criticisms of the obviously defective into the ideal engine of 1911, the engine that is to be (and is) the logical development of these observations of faults to be remedies it may surprise you to know that a careful explanation of the engine in the engraving will be enough to convince you that theoretically the engine described should remedy these evils, and leave the proof of it to the performance of the engine in the last three months and in the years to come. The engine before you has no valves (except the auxiliary air valve of the stock Schebler carburetor) but has four ports which are capable of functioning with greater economy of fuel and evenness of torque, at the one most efficient speed, in such a manner as to make the engine power exceed that of its A. L. A. M. rating. The usual imperfect functioning of 2-cycle engines is the logical result of endeavoring to make a port engine sufficient at any speed and is as imperfect in 2-cycle engines as the set spark of 4-cycle engines, or set valves for variable speed steam engines. Although the ports are designed for efficiency in fuel consumption and cut-off at, say, 1,000 r. p. m., the engine will keep running as slow as 300 r. p. m. The waste of mixture at this slow speed is great, but in aeroplane service one is a poor operator indeed who can not use propellors suitable to the most efficient speed of the motor.

After citing so many obvious defects in the best 4-cycle engines let us take a like view of the crudities, with which likely enough you are most familiar, and which we readily call to mind when 2-cycle is mentioned to us. Until very recently any collection of ports, carburetor, piston-rod and crank-shaft has been able to pass as a 2-cycle engine. As the price was low, and they would work a motor-boat, thousands were sold. How many of you can call to mind a 2-cycle engine with which you have had experience that embodies the finest conceivable engine workmanship? The comparison is rather that of a scow to a racing yacht. When you realize that the workmanship on this engine of 1911 is as fine, and the builder will tell you finer, than that on any high-class, high-priced aeroplane engine in existenge to-day, you must realize that this engine cannot be relegated to a place with cheap, crude products of the typical American small factory with but one type and one aim. Another reason for the difference is that the designer and builder of this engine also builds a record-breaking heavy duty marine 4-cycle engine which will bear the closest inspection in its class also.

Granting then the excellence in workmanship and setting aside all the prejudice which has been accounted for, let us study those things in the design which make this engine the highest powered and most reliable motor in sight for 1911 aeroplanes. Speed being the cry, and high power necessary to produce it, this engine seems to be the best in the field.

The usual 2-cycle engine does one thing which is responsible for most of the lubrication troubles—i. e., cast a large by-pass on the side of the cylinder. The objections to this method are usually two. The first reason is that this by-pass necessitates additional size to the base of the cylinder and the crank-case, the sum total of a number of cylinders being considerable weight and less base compression. The second and most important objection is that the mouth of the by-pass invariably leads from a part of the crank-case well within the field of the oil being splashed by the connecting rod; hence every quick rush of gas from the base to above the piston carries oil from the base where it is wanted to above the piston where it is harmful. A by-pass, then, that takes this compressed mixture from the base at a point sufficiently well removed from the splashing oil, would cure one of the greatest 2-cycle difficulties. This 1911 engine has a four-port system and two of these ports perform the duty of the old by-pass system. They are so arranged that the compressed mixture leaves from the side of the piston through a short 3 or 4 in. of aluminum by-pass to above the piston, having merely gone a distance equal to that part of the piston holding the rings. By examining the engraving of the engine you will see the aluminum plates on the side of the engine opposite the carburetor. Notice that this passage is well up from the crank and out of the range of splashed oil. In going through this passage another very desirable function is performed which is another exclusive feature of this new engine. The compressed gases, upon being released and going through the side of the piston, keep the piston cool. The nearest approach to this in other 2-cycle engines is the Whitehead motor where they have fallen from grace by resorting to a valve in the head of the piston.

After seeing that there is nothing unusual to remove oil from the crank-cases of this motor, let us turn to the method of getting the oil into them. It has already been suggested that a method involving no extra mechanism and which depended on the mixture used would be ideal. This is accomplished in this motor in a manner absolutely certain. The oil is mixed with the gasoline in the tank and all fuel and oil enter the engine through the spray nozzle of the carburetor, thence into a warm manifold. Entering as an atomized spray, the mixture is necessarily very cold, but three things occur which insure the gasoline remaining a vapor and the oil a liquid. The manifold is hot and receives this heat from the exhaust of the motor. The inlet port and exhaust port are separated only by a thin cast gray-iron wall, which heats the manifold, and against which the gas and oil strike in entering the crank-case. The separation of the gas and oil is further insured by the whirl that the gas makes in the crank-case, due to the motion of the crank, the change in direction it makes to get to the by-pass port, and the fact that the compression literally squeezes the oil out of the gas. Therefore the oil is practically poured into the crank-case and feeds a splash basin of the crank-case more surely than a mechanical oiler and with the additional advantage that if the process which brings it in does not occur, the engine would not run. This oil then lubricates the crank-shaft bearing, connecting rod-bearing, and piston, just as in any splash system.

In addition to the cooling of the crank-case and piston by the incoming mixture the 1911 engine has a jacket through which a large rush of water can easily pass. The cylinders are cast en bloc, this method being the strongest for its weight when there are no valves or valve seats to consider. The side wall and head are entirely surrounded by water, except where spark-plug and pet-cock enter, and have more nearly even cooling from this than any other method affords and with less weight of jacket. The pump is put directly on one end of the cylinders and the discharge at the other without involving a single pipe in between. One might say that the cylinders near the pump would always be cool and those at the discharge end get only very hot water. This would be so with a small pump forcing water through intricate pipes and spaces, but where the water has an easy flow through large openings and is pumped at the rate of a barrel a minute (at 1,000 r. p. m. engine speed) the difference in temperature of the water from one end to the other is slight indeed.

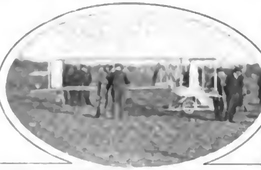
A glance at the engine will easily reveal its great strength. Beside the block cylinders strapped together at the top, through the middle, and at the base, the two crank-case sections are beautifully ribbed and stiffened. The bolts that hold this crank-case together may be seen going from the bottom of the crank-case through the base of the cylinders, exerting a crushing strain on the aluminum. No one of these bolts has a thread in the aluminum and as they are of the finest steel and hand made nothing in light construction could be stronger.

When you realize that there are six cylinders, 5 x 5 in., and that they each give an impulse every revolution you can begin to conceive the power possible from this engine. Six explosions to a revolution and each one as strong as the explosions in a 4-cycle cylinder. We may stop here and examine this statement—each explosion as strong as the explosion in a similar 4-cycle cylinder—and append it by saying that they are stronger, at the most efficient speed of the engine. In refutation many will say that the mixture is foul in a 2-cycle cylinder. One may answer this by saying the same of a 4-cycle cylinder, for the piston in a 4-cycle engine can only scavange its own stroke, leaving the firing chamber full of the products of combustion. Who shall say that they have proved 4-cycle explosions stronger than 2-cycle when properly designed ports afford as good an opportunity for clean charge at one certain speed as a 4-cycle, bearing in mind that both are mixed with a slight residue? This continuous torque certainly does away with two idle cycles of the piston and keeps pressure always above the piston, preventing it from scraping oil from the wall of the cylinder on three strokes and burning it on the fourth. The increased efficiency of using the same pistons and crank oftener instead of carrying a greater number over two more cycles certainly seems to account for the enormous power of the 1911 engine. It would take 12 cylinders 5 x 5 in. in a 4-cycle engine to represent the same cylinder capacity. Such an engine would weigh so much as to be prohibitive in the present state of the art of flying as it would weigh 700 or 800 lbs. The equivalent in 2-cycle weighs but 286 lbs., with wires, spark-plugs and ignition system, and combines the ideal simplicity with great strength, needs no flywheel, no oil tanks or pumps or pipes or gages, and is most efficient at 1,000-1,200 r. p. m., which is a good speed for many excellent air propellers. The largest power in light engines suitable for aeroplanes seems to be the Gnome with 14 cylinders, 4.36 in. bore by 4.7 in. stroke, and is rated at 100 h. p. Recent articles in reliable publications seems to indicate that the engine develops less than its rated horse power, and this delicate and intricate mechanism weighs at least 280 lbs., consumes 4 litres (1.06 gal.) of expensive castor oil and "300 grammes of petrol per horse power and per hour," to quote the Gnome catalogue. This for 100 h. p. equals 9.46 gal. of gasoline and 1.06 gal. of oil, or approximately 10½ gal. of fuel and oil per hour for 100 h. p. or less.

As well in fuel consumption as in horse power does the 1911 engine excel. The engine will test above 140 h. p., but is modestly rated at 100-125 h. p., and when delivering 100 h. p. uses 6.1 gal. of mixed oil and gasoline per hour, making but 230 grammes per horsepower per hour consumption for an engine capable of delivering 125 h. p. and better.

A good comparison between the engine of 1911 and the Gnome, its nearest competitor, is that of the French locomotive and its American equivalent. Wonder at the workmanship and elaborateness of small parts is inspired by all French machinery, but of what avail when competing with an engine void of small parts and as exquisitely executed?

The extreme lightness of this large engine may not appeal to that class of experimenters who believe that aeroplanes should be built upon the argument "that a stone can be thrown farther than a feather, the heavier the aeroplane the better." Nevertheless there are those who readily realize that aeroplanes must be designed for engines and propellors for the combination and it is to this class that 125 h. p. and a weight of 350 lbs. for engine, radiator, water, and propellor will appeal, especially when combining the best in conservative engine practice.



SOME NOTES ON THE NEW WRIGHT MACHINES

WITH the expectancy of keeping the Gordon Bennett aviation trophy in America, the Wright company built a special machine, capable of flying 80 miles an hour. A private trial fully justified expectations based on design. This followed closely regulation Wright lines, except in size, weight, absence of passenger's seat and running gear. Following are the only correct figures published:

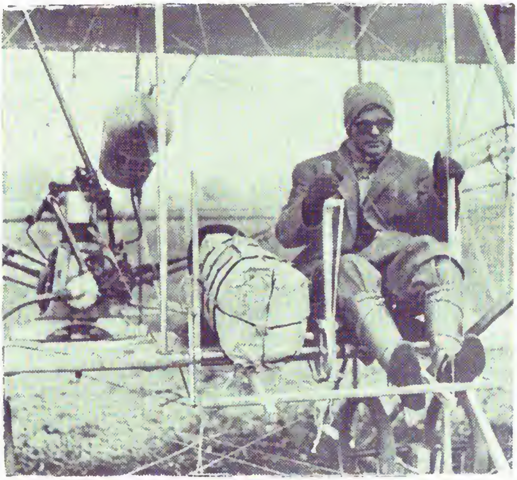
The spread was 22 ft., the main planes 3½ ft. fore and aft. The actual supporting surface of the two main planes totaled but 145 sq. ft. Eight of the regulation cylinders, which are now 4⅜-in. bore by 4-in. stroke, were arranged on a special crank case. The A. L. A. M. rating would be 61.2 h. p. The weight of the machine was 780 lbs. without the operator. The combination warping and rudder lever was at the aviator's left, the elevator rudder at the right hand. The outriggers and tail were the same as on the standard 39-ft. machines. There was, of course, no front elevator, as all machines now being made have this at the extreme rear. It was, in fact, a duplicate of the other 22-ft. machines, except for motor and running gear. Besides the regulation four wheels, mounted with rubber bands two to each skid, there were two additional wheels mounted on an axle fastened at each end to the front ends of the curved skids.

There were at Belmont two more 22-ft. machines, with the standard 30.6-h. p. (A. L. A. M.) motor, of 4 cylinders. These weighed 610 lbs. without the aviator, who added another 150 lbs. Both of these warped and steered right and left by the lefthand lever, as Brookins is used to that position for this lever.

The third machine of small size had a spread of 27 ft. 7 in., the other dimensions of the planes being the same as the ones mentioned above. This was known as the altitude machine and was used by Johnstone at Belmont and by Hoxsey at Baltimore. The warping lever on this machine was at the right hand.

(Continued on page 232)

FLIGHT PROGRESS ABOUT THE COUNTRY



P. O. Parmalee's Express

Parmalee Starts Aero Freight Line.

Fastest Speed for American Machines.

For the first time in aviation history an article of trade has been transported via aeroplane from one city to another. On November 7, P. O. Parmalee, in his Wright biplane, similar to those made for the general public, carried 10 bolts of silk weighing 70 lbs. from Simms Station, near Dayton, to Columbus, the consignee and backer of the enterprise being the Morehouse-Martens Co., dry goods merchants of Columbus. The distance by air line is 58.3 miles, and the time for the trip, with a wind of 5 to 7 miles an hour (on the ground) was 59 min., an average speed of 59.3 miles per hour. The value of the goods transported was $600. The Wright Company, acting as the "common carrier," applied their established tariff of $71.42 per pound. The grocer and baker have not as yet taken up the new rapid delivery.

The aeroplane left Simms Station at 10.41 A. M., passed South Charleston, Florence Station, London, West Jefferson, Alton, over High Street, the center of Columbus to the landing at the Columbus Driving Park. The time to the Driving Park was 66 minutes. The machine crossed High Street at 11.40, the time to that point being 59 minutes for the 58.34 miles. The balance of the time was employed in manoeuvres at the Driving Park. The center of the track it almost exactly 2½ miles east of High Street, so the total distance flown was 60.84 miles, as measured by Mr. Williams Welch, of the office of the Chief Signal Officer in Washington.

This speed is the greatest yet made by any American aeroplane.

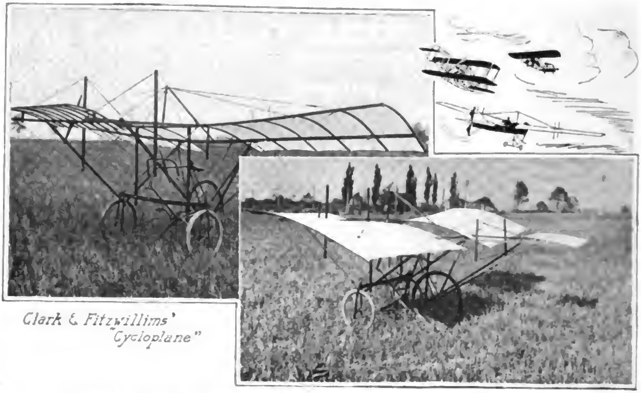
Corrected Distance Hoxsey Flight.

The distance from Springfield Fair Grounds to Clayton, Mo., Arch Hoxsey's first landing place on his record American cross-country flight, October 8, has been accurately measured by Mr. Williams Welch, chief draughtsman of the U. S. Signal Service, as 89⅝ miles. After stopping there to get his bearings he went on 7½ miles further to the aviation field at Kinloch Park, St. Louis, Ill., making a total distance of 97⅛ miles. Average, 32.5 miles per hour.

Rexford Smith Flies Near Washington.

Rexford Smith has made at College Park, Md., his first successful flights in his Curtiss type biplane, fitted with the 6-cylinder 100-125 h. p. Emerson engine. He only began experimenting with it on the 12th of November and it was flown by three different people, making 11 flights in all, of some 200 yds. in length. No attempt was made to make long flights. Mr. Smith is going carefully in order to avoid breaking up the machine. The machine is larger than standard Curtiss machines and has a system of control designed by Mr. Smith himself.

Orville Wright left November 15 for Germany to attend to matters connected with the affairs of the German Wright company.



Clark & Fitzwillims' "Cycloplane"

Flights in Unique Glider.

Messrs. Clark and Fitzwilliams, of 123 Southampton Street, Buffalo, N. Y., have devised a unique glider with which eight, so they state, successful glides have been made, the operator weighing 119 lbs.

This machine has approximately 100 sq. ft. of surface. Although it is 15 ft. by 16 ft., it weighs but a trifle over 55 lbs. The main wing is built so that it can be warped or put at any angle. Unlike any other glider, it has a bicycle arrangement by which it can be propelled at a sufficient speed to make flight possible. The elevating plane, which is 2 ft. by 3 ft., projects 4½ ft. from the main wing, while the rear plane, which is 2 ft. x 2 ft 8 in., extends back 7 ft. from the center of the main wing. To this plane is fastened the rudder, part of which is above the plane and part below. The machine is equipped with three wheels, two in front and the driving wheel half way back.

The machine is so arranged that, while in motion, it can be controlled by means of levers which are fastened to the framework directly in front of the person seated in the machine. Fittings, turnbuckles, etc., and Naind cloth make the machine complete in every detail. Although unexperienced in gliding, flights beyond 100 ft. have been made successfully without a mishap. This machine was the result of three weeks' labor, and is to be used entirely for experiments.

A new design of an aeroplane is to be constructed in the near future. Small models of this design, driven by rubber bands, have flown at the height of 15 ft. for a distance of 62 ft. This new design of aeroplane will of course be 5 ft. by 5 ft. 8 in., and is to be driven by a contrivance which will be rigged up in lieu of a motor.

"Sky Pilot" Takes Sky Trip as Unwilling Passenger.

C. O. Hadley, of Steurer & Hadley, Tarrytown, N. Y., a one-time Y. M. C. A. aero course student, has been building an aeroplane at Empire City racetrack. During October, while testing his Emerson engine, with one man holding on each extremity of the plane, himself in the driving seat and the fourth man stretched out on the lower plane at work on the engine, the machine pulled the two first mentioned men off their feet and actually left the ground with the aforesaid dangling in the lower stratum of the upper air. As quick as Hadley discovered the predicament of his unintending birdmen he shut the engine off and the aeroplane decided to come back to Mother Earth, without damage to either Mother or the machine. Rev. H. E. Wright, a minister of the Gospel at Tarrytown, and U. G. Teetzell were the two men who hung to the wings.

Penn. State College Starts Big Work.

The Pennsylvania State College, of State College, Pa., is to be congratulated upon being the first college or university in this country to take up work in aeronautics on a large scale so far as known. The School of Engineering of this institution is now erecting a level circular track, two hundred feet in diameter, for making tests upon aeroplanes, propellers and planes. A car operated by an electric motor runs on the track at speeds up to 60 miles an hour. To this car are attached the planes or propellers to be tested. The frictional resistance, or lifting power of the planes and the propelling force and efficiency of propellers are determined through a series of dynamometers which record by electrical means on instruments placed upon a platform in the center of the circular track. The problem of plane shape and surface can be readily studied by this apparatus, as can those relating to the shape, size and speed of propellers.

M. F. H. Gouverneur, of Wilmington, N. C., has done work somewhat along this line, and with particularly fine facilities. He has made experiments upon surfaces mounted on a flat car, and run over a perfectly level stretch of track, propelled by an electric car. Mr. Gouverneur is interested in a trolley company in that city, and at night time there is no difficulty in making experiments to his heart's content.

Captain Willoughby's Control.

In the November number a note was made of Captain Hugh L. Willoughby's first flight, and in this note it was stated that "the front and rear horizontal rudders worked in conjunction with each other as in the Farman machine and some of the Wright machines." It is possible that this may have given the impression that Captain Willoughby made use of others' ideas. In a letter to "Aeronautics," he states:

"When Orville Wright made his first flight at Fort Myer, he gave me permission to use his warping wings, and in return I desired him to use my combination rudders (a patent having been applied for). Mr. Farman got them in a similar way. When he made his first flight at Brighton Beach I desired him to use my patents.

"By my permission Mr. Curtiss and Mr. Christie have put it on their monoplanes, and six other men have also adopted it on machines now building. I have publicly stated that I desired that it shall be used by everybody, and that I will not sue on infringements."

B. H. Dale, Little River, Kans., is another who is making a Demoiselle. A. Weller, Jr., Syracuse, N. Y., is copying the style of monoplane put out by Max Stupar, of 9626 Erie Avenue, Chicago. Mr. Stupar is also building a "Stupar-Dumont" monoplane for J. Ponzio, Pullman, Ill., which will be ready for trials the first of December.

Ely Flies From War Ship.

Shortly after 3 o'clock P. M. on November 14, Eugene B. Ely, flying his Curtiss biplane, glided from the platform erected on the front of the U. S. cruiser Birmingham, stationed in Hampton Roads, Va., swooped down until he touched the water, then rose rapidly. Five minutes later he had landed safely on Willoughby Spit, near Norfolk, a distance of about three miles.

Impact Damages Plane.

The impact with which the machine struck the water after its thirty-seven foot drop from the front of the cruiser scarred one of the propeller blades, and a small piece was split from the blade.

He did not wait for the Birmingham to get into motion, which would have added to his momentum and thus have aided him greatly, but, seizing an opportune moment between the intermittent showers, he was off before those on the ship with him and on the other vessels stationed at various points nearby to follow and assist him in case of need, were aware that he was ready for his flight, the first of its kind in history.

Ely proved that it is possible to fly safely from a ship, and after having done this, asserted with emphasis that it would be an easy matter for an aeroplane to alight on a vessel, either while the latter was moving or standing still.

A platform twenty-five feet wide and eighty-five feet long had been built on the Birmingham, with a five degrees incline. The aeroplane was equipped with pontoons, which would keep it on the surface of the water for some time in case the machine should drop.

The flight was witnessed by many naval officers and others of high rank.

Arrangements were made on November 12 for a flight by "Bud" Mars (Curtiss) from a platform on the deck of the Hamburg-American liner Pennsylvania under the auspices of the New York "World," starting from a point fifty miles at sea, and newspaper men had sailed ahead, and had waited for several hours, the Pennsylvania came along, but without the aeroplane. In testing the engine the propeller was broken, and the aeroplane was taken off the ship before it started.

E. H. Wiseman, 1383 E. 92nd street, Cleveland, Ohio, is experimenting with the third aeroplane, a monoplane with a 3-wheel chassis, with a 4-cylinder, double opposed motor, 4x4, 25 h. p. This flew several hundred feet two days before Curtiss made his Euclid Beach to Cedar Point flight, and, so far as known, is the first Cleveland-built aeroplane to fly. The cylinders are steel, water cooled, and the engine weigs 88 pounds. It gives a thrust of 200 lbs. at 1,000 revolutions, with a 6 ft. by 7½ in. blade. The plane has 32 ft. spread, 25 ft. fore and aft. Single elevating plane and rudder, both in the rear. Supporting surfaces, 162 sq. ft. Shelby steel tubing is used, with basswood ribs ⅝x⅞ in., set 18 in. apart and covered with oiled muslin. Lateral balance is obtained by means of ailerons in the tip of each wing. The machine is controlled by straps on the shoulders for lateral balance and by a single lever, similar to the old-style steering lever of the Oldsmobile runabout, for up and down and sideways movement. The lateral beams in the wings are Shelby tubing. The single lever swings left and right for the rudder. The upper end, which breaks over, works the elevating plane. The ailerons are set inside the wing surface, hinged to the front beam and extend about two-thirds back.

According to R. O. Rubel, Jr., of Louisville, Ky., who has recently returned from a trip through the West, there is great activity all over the country.

The Montgomery monoplane, in Chicago, is all ready to make flights. This is built by James E. Plew, of Chicago, and Victor Lougheed. The Holmes rotary motor, which has not yet proven to be a success, is still being experimented with. A new model will be brought out which is said to resemble the Gnome. In Chicago no one seems to know that anyone in the same town is interested in aeronautics, at least there is no co-operation.

The Detroit Aeronautic Construction Co. has sold about 35 motors during the last year and are preparing to move into larger quarters. Handicapped up to this time by a none too large factory, their workmanship is good.

The Detroit Aeroplane Co. seems to be prosperous, having sold 48 of the 20-30 2-cylinder opposed motors. The concern is also making a monoplane, which is about complete, and is a cross between a Demoiselle and a Bleriot. A 6-cylinder, self-starting, 75 h. p. motor, designed on the lines of the 5-cylinder Anzani, will be out in a short while, under the management of Mr. Weinburg, designer.

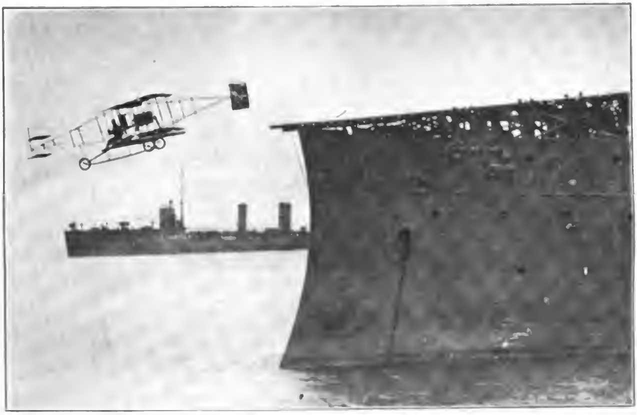


Photo Copyright by Underwood & Underwood

Eugene Ely in his Curtiss aeroplane starting on his flight from the deck of the U. S. Scout Cruiser Birmingham in Hampton Roads

20 Aeroplanes For Signal Corps.

Brig.-Gen. James Allen has recommended the acquisition of at least 20 aeroplanes in his annual report for the fiscal year ending June 30th last, which was recently made public by the War Department. Gen. Allen contends that his estimate is extremely low, and that it would provide for only two aeroplanes for each camp of instruction. To operate this number of machines, 20 trained officers would be required as pilots, and in addition, each machine must carry at least one observer, who would require much training and actual practice before the full military use of the aeroplane can be obtained.

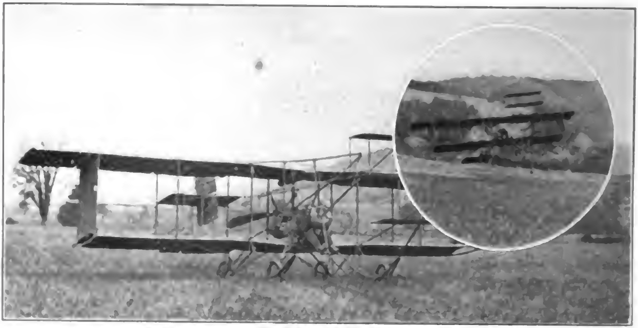
A monoplane has been built by Herbert C. Kellogg, of Kewanee, Ill., of 38 ft. spread and with a total of 285 sq. ft. sustaining surface. The plane is double surfaced, built of hickory and spruce and is 6 in. thick. The control is by a 3½ x 8 ft. elevator and two 2 x 4 ft. rudders at the rear. The center of weight is 5 ft. below the plane, and is mounted upon three wheels, two being driven by spur friction from the engine. The propeller is of his own design, 8 ft. in diam., built completely of steel. It is chain-driven by a 4-cylinder Boulevard engine, fitted with a clutch on the engine shaft sprocket. The aim is to build a machine which will be absolutely reliable as to construction. For that reason he is using steel in the construction throughout, with the exception of wing construction.

Commencing with the elementary principles of aeronautics the classes will advance with studies of both aeroplanes and dirigibles to the most intricate problems of air flight down to the inevitable "slip" and the proper "pitch" of the propeller. In the laboratory work in gas engines the students will use the laboratories and equipment of the automobile and motor boat schools. As a successful flight inevitably depends on an efficient gas engine this part of the course will not be neglected.

Wilbur R. Kimball is conducting the course. Besides the classroom studies, it is planned to have the members of the course visit the testing grounds and aerodromes in the vicinity of New York, inspect actual flying machines of different types and observe professional aeronauts in actual flights. Members of this class will also make model aeroplanes which will be tried out and their defects and virtues pointed out.

That the course in aeronautics is practical and helpful is proven by the achievement of Clinton O. Hadley of Tarrytown, N. Y., a graduate of last year's class, who built a biplane which at its try-out on October 12, circled the Empire City track carrying four persons—Mr. Hadley, Rev. H. E. Wright, U. Grant Teetsell and Julius Graveson, all of Tarrytown. Mr. Hadley has his biplane entered in the Aviation meet at Belmont Park. He says that his machine is a result of his course at the West Side Y. M. C. A.

On October 31, the opening night, the class heard talks by Clifford B. Harmon and Winthrop E. Scarritt.



The Thomas Biplane

The Kirkham-Eells Co., located at Bath, N. Y., are making complete aeroplanes for the market. We have had reports on many good flights, but have been unable to obtain any data as yet from the company, as it has been so busy. This information is promised us for the January number. They are makers of propellers and the well-known Kirkham motor.

The Young Men's Hebrew Association in New York offer a course in kites and model aeroplane construction to elementary and high school pupils. The course includes a study of the principles of aeronautics, besides its history. Twenty-five boys are now constructing models. One model dirigible is under construction. Mr. A. E. Horn is giving the course.

Aviators of the future will be trained in a special course in aeronautics at the West Side Young Men's Christian Association, 318 West 57th street, and the indications are, from the present enrollment, that the class will be a popular one. The object of the course is to give a working knowledge of the principles that must be followed in the construction and operation of both aeroplanes and dirigibles.

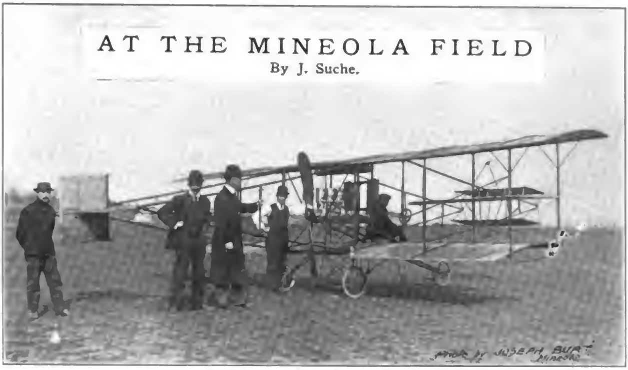
William T. Thomas, of 394 Canisteo Street, Hornell, N. Y., reports very good success with his biplane, of which readers have heard before. His plans are to enter the exhibition business.

He says: "One of our hardest problems was getting the machine to fly easily, due to its weight, as the motor weighs 225 lbs. for 30 h. p., and as the rest of the machine was built rather on the heavy side, we have a total of some 850 lbs., including weight of aviator. However, the Kirkham 4-cylinder motor has worked to perfection, and as this is practically a standard automabile engine. It stands up well, and is good for a tremendous amount of service. The running gear has also acted perfectly, and the fact that during more than a hundred jumps while learning, we still use the same wheels and tires we started with."

H. McGregor, 1611 19th Street, Bakersfield, Cal., is building a Santos-Dumont type machine, and intends to begin flights latter part of December.

AT THE MINEOLA FIELD

By J. Suche.



The Addosides Machine

SEVERAL new machines have made their first flights from the Aeronautical Society's grounds at Mineola during the past month, ending the middle of November.

Up for 49 Minutes in Moonlight.

Perhaps the most interesting was a night flight by Tod Shriver, who stayed up for 49 minutes, coming down at 9:39 P. M. This was his very longest flight, and he was not an expert yet. Since then he has filled several exhibition engagements, and will shortly go to the coast.

First Aeroplane Built by Woman.

Early this spring Miss E. L. Todd, who has been experimenting for a number of years with models, and organized the Junior Aero Club, had a biplane built by Wittemann Brothers. Work on this, trials and alterations have continued all summer, until a few days ago it was given its first flight, with D. Masson, Paulhan's mechanic, as aviator. Both times it was taken out it flew very well. It was found the controls were not balanced, and caused too much exertion in their operation.

The striking features of the Todd machine are: wings curved from the center outward like a bird's wings; in soaring, planes quite far apart, which necessitates heavier struts and increase in weight, mounted on tall skids, with the result of making the apparatus set well above the ground. The spread is easily over 40 ft., with surfaces 6 ft. 6 in. fore and aft. The front control is a single surface similar to Captain Baldwin's. In the rear there is a rigid stabilizing plane, and behind that, hinged to its rear edge, is a hinged control working in conjunction with the front control. Underneath the fixed rear plane is a vertical plane. The skids are of Farman type, with two 28 in. wheels mounted on an axle. Curtiss-type ailerons are placed between the main planes, hinged to the front strut. The engine is an eight cylinder 60 h. p. Rinek, driving a propeller 7 ft. 6 in. x 4 ft. The engine is mounted on the lower plane. Shoulder braces operate the ailerons and the balance of the control is practically Curtiss style.

Charles Henry (Dr.) Cooke has sold his Elbridge engined Curtiss type biplane to a southern man.

The machine of Samuel Barton, Curtiss-type, has been overhauled, the outriggers lengthened front and rear, and an Elbridge 4-cylinder engine installed. After these alterations it has been able to get off the grounds, but it is not yet in perfect condition.

The Walden-Dyott Co., which has only had its building a month, is now building its third monoplane. Anzani engines are being fitted.

Louis Rosenbaum has removed his big monoplane into the big shed, and is ready for a try-out in another week. M. P. Talmage is rushing work on his new Curtiss-type machine, and expects to have it ready for the holidays.

N. C. Addosides, of Wilmington, Del., has purchased the Curtiss-type of William Patterson. After trying two other motors he installed a 3-cylinder Smalley, of 30-40 h. p., and made some eight flights—that is, Aviator Masson did the flying. The Smalley motor is all aluminum, two-cycle in principle, cylinder 4½ square. The cylinders have cast iron liners.

Masson and Marcel Penot both have been flying the machine of the Mohawk Aviation Co., an exhibition concern, since the 30 h. p. Harriman motor was changed for a 50 h. p. This machine is another Curtiss-copy, with the upper plane extending out beyond the lower.

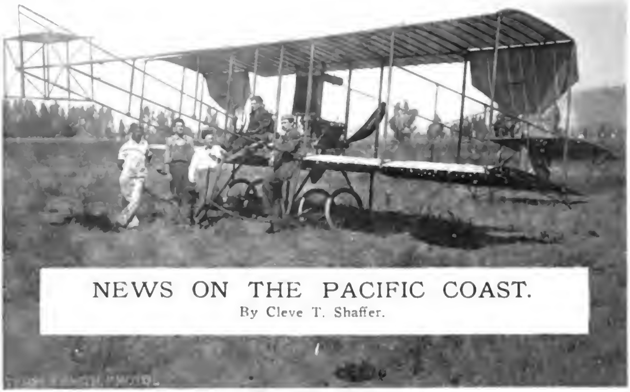
Two Machines Smashed.

On November 10 two machines were smashed in being tried out. Charles B. Morok tried out a Shneider-made Curtiss-copy, but could not find the switch to shut off his 4-cylinder Elbridge motor. In place of the two rear wheels as usual in Curtiss-type machines, he has skids with two 20 in. Hartford wheels for each, Farman style. There is another wheel out front. Nicholas Rippenbein has a light Shneider-made biplane, along Farman lines in appearance. This was demolished in landing after a short flight. His equipment includes another Elbridge, with Hartford tires on 20 in. wheels.

Joseph Seymour has returned from an exhibition tour through New York State.

The recent heavy gales that have been raging for the past two or three weeks have depopulated the tents very rapidly. During the process there were a number of machines that were badly damaged. One of the most notable accidents was the lifting of Mr. Davis' tent, machine and all over the fence into the flying grounds. When rescued the machine was a sorry-looking object, as it had been bent and twisted out of all recognition as a flying machine. The funny part of this accident was the fact that the machine was staked down to the ground, but was of little benefit, as the wind took it, stakes and all.

No one seems to have considered gas and oil consumption on aeroplanes. The big Wright machines use 22 lbs. of gasoline per hour, and 1 lb. of oil. The 4 cylinder small machines run 23 lbs of gas to the hour.



NEWS ON THE PACIFIC COAST.

By Cleve T. Shaffer.

Wiseman-Peters No. 2

THE Wiseman-Peters II machine, as predicted in **Aeronautics**, shows a decided refinement in construction detail over the first machine, and is said to be a very steady flyer; this is especially noticeable, it is claimed, in turning, there being an entire absence of the skidding found with the number one machine. This quality is attributed by Mr. Peters to the placing of the fabric on top of the ribs, which give, undoubtedly, a grip on the air. The use of laminated ribs, their comparative high camber and the lowering of the running gear (Mr. C. W. Sirch objects strongly to "chassis"), are the most noticeable changes from the former flyer.

Planes spread 32 ft. and the length of the machine fore and aft is 10 ft. Front beam forms leading edge. Rear beam is under ribs. Chord 6 ft. 2 in. Camber 4¾ in., about 18 in. back. Fabric Naiad No. 6A, tacked on with tape. Rear edge is laced to wire running through ferrules on rib ends. Ribs of 7 laminations, ¾ x 1½ in. cross section. Intermediate ribs 3 laminations, ⅝ x ⅝ in. Their peculiarity is a slight upward curve at rear ends. The superior efficiency of this shape is doubtful as, if the writer remembers correctly, this upward curve was used on one of the Aerial Experiment Association's machines and was discarded.

Supplementary Planes. Double front horizontal rudder as shown in the photo has since been changed to a single surface 7 ft. 7 in. x 3 ft. and works in conjunction with a 2 ft. extension hinged on the edge of a rear stabilizing plane 8 x 4 ft. The outriggers have 3 laminations, 1⅛ in. round.

Control. Same as in old machine. The Farman type ailerons on No. 1 have been discarded for Sommer type hinged on upper surface.

Running Gear. Considerably lower. No sockets are used, cold rolled steel 3/32 in. being bent to the proper angles. Skids are of hickory.

Power Plant. Unchanged. Weight without operator 750 lbs.

Aeronautics at Pacific World Fair.

The management of the Panama-Pacific exposition, to be held at San Francisco in 1915, will probably make unusually elaborate arrangements for a demonstration of the progress made in aviation and aeronautics. The world's fair at St. Louis in 1904 was the first to give definite recognition to air navigation, and at that time the fair directors regarded the move as more of an advertising scheme than anything else, and the results, particularly those accomplished by Roy Knabenshue, surprised them immensely.

Since that time aviation has been made practical, and as the San Francisco exposition will be the first opportunity of the kind for a summing up of the progress made and a showing of the possibilities the department to be devoted to aerial activities will assume great importance.

A feature that the Californians interested in aviation are taking into account are the unusual opportunities for demonstrating every phase of air travel at the 1915 fair. San Francisco has at hand a harbor 180 miles long, over which a complete aerial fleet may maneuver at will, long stretches of level fields, and the mountains close at hand for every sort of demonstration that will prove the worth of air machines. For this reason they believe that practical experiments which will prove of great value to the government in determining the army and navy expenditures for air craft may be worked out on a large scale with the co-operation of the fair authorities.

The California aero clubs are working for the success of the Panama-Pacific exposition and its official recognition by Congress, and Los Angeles is co-operating with San Francisco in this. The Aero Club of California has appointed an exposition committee, consisting of George B. Harrison, H. LaV. Twining and Buel H. Green, to stimulate greater interest in the importance of the fair among members of aero clubs throughout the country.

Roy Brewer, of Oakland, is one of the latest of California aviators to get off the ground in a biplane of his own construction. After several unsuccessful trials, in which, among other things, the rear stabilizer was found to have too much incidence, Mr. Brewer made a short flight, but was unable to right machine when struck by a side gust, and in landing slightly damaged the machine. Some details follow:—

Spread, 35 ft.; chord, 6 ft.; camber, 4 in. Ribs are of unique construction, for which great strength and lightness is claimed—it is said machine (without engine) can be lifted by the two center ribs. Elevator (Curtiss type) double. Power plant, 4-cylinder Pope-Toledo, 35-h. p. auto engine, which has been materially lightened. Drives direct a 6 ft. 6 in. diam. by 4½ ft. pitch propeller. Complete description in a later issue.

THE VOYAGE OF THE AMERICA*

By Melvin Vaniman.

FOR 75 days we labored from 7 o'clock in the morning until 7 o'clock at night, and very often much later. You can imagine our thoughts as we made preparations for our journey.

We realized well that it was no child's play. The whole thing was a matter of careful calculation. We knew the distance across the great Atlantic to the spot we wanted to reach was 3,000 miles. We knew the difference in temperature between midnight and midday. We knew we had to carry enough gasoline to take us that 3,000 miles, and we knew we would have to depend on the wind helping us out. I might add that we had to enlarge the envelope of our ship 31 per cent. in order to make our proposed voyage across the Atlantic.

With all preparations completed and our calculations carefully figured out and tabulated, our supplies on board and our ship in perfect condition, we started on our trip.

On the morning of the 15th we launched our ship. Conditions could not have been better. We took our way out to sea as far as possible, as we did not want to get in the way of any of the big ocean steamships. With the famous equilibrator trailing along, a meeting of this kind might result in serious difficulty, if not absolute disaster.

All day Saturday there was no incident worthy of note. For four hours we were constantly in receipt of wireless messages from shore—and, in fact, we picked up messages of all kinds from different points.

We could hear the Atlantic City operators telling other operators that the airship had left Atlantic City, and occasionally we could hear New York asking for news about us. We could also hear boats sending messages from one to the other.

Everything went well until about 8 or 9 o'clock Saturday night. We had two men watching. We had the motor running its full capacity, as the wind was blowing us toward Long Island. There was a very dense fog, and not being able to see more than the length of the airship, we were constantly on the lookout for trouble, for you must remember that the equilibrator was trailing along through the waves below us. You can therefore imagine that we were somewhat concerned when one of the boys called out that there was a ship in front of us. You may also be able to imagine what it would mean to us if the airship got tangled up with the equilibrator. The ship below was no doubt tooting its foghorn, but of course we could not hear it—in fact, we could not hear anything except the whirr of the motor—but by a quick turn on the helm we succeeded in getting astern of the ship. I forgot to mention that the fog had dissipated somewhat, and we could see the vessel far below us; and we must have presented a strange appearance to the passengers.

After this incident there was no trouble during the night, except that the motor ran pretty hot—but it seemed that the hotter it got, the better it ran.

All day Sunday, from about 6 o'clock, the wireless operator tried to get in communication with the shore. He could hear ships talking, but when he tried to get in with them he found that the stations were not able to hear him.

Sunday night our troubles began, but I want to say that the equilibrator did not do the jerking some people have described. The wind was blowing at the rate of 30 to 35 miles an hour, the waves ran high, and the equilibrator, being so much in the water and the airship going so fast, it had a tendency to come lower than it should.

We had to throw over gasoline, oil, or anything else available, which helped us somewhat, as it lifted 15 of the 29 gasoline tanks composing the equilibrator out of the water. This, however, did not last long, for we kept going up and coming down, until finally nearly all the tanks were in the sea, and the airship was traveling hardly 5 or 6 ft. above the water. The next moment we would spring 20 or 30 ft. in the air, only to come down again immediately. We knew what it meant if this was to keep up, although we were not in any immediate danger when the Trent came along. Nevertheless I can assure you that she was very welcome. We had thrown away so much of our gasoline that we knew it would be impossible for us to reach England. Things were beginning to look pretty dark, as we knew we were 200 or 300 miles from any steamship, and it meant two or three days in the lifeboat, if we should cut it off from the airship, before we could reach land or be picked up.

It was after meeting the Trent that the nearest approach to a disaster happened. We decided to launch the lifeboat, so everyone got into the boat, and released the clamps which held it to the rest of the airship. Here was where the danger lay, and it was a very perilous undertaking, for we were half drowned with the spray. We set off, the Trent following at full speed, but she was going so fast that it looked as if she could not pass us free, and that our little boat would be cut in two. I assure you that the Trent coming toward us looked like a mountain. She passed us, the wash throwing us clear, so that the propellers did not strike our boat. Then after steaming ahead for a mile or two, she turned, came back, and we were taken on board.

Mr. Vaniman, in answer to questions asked by members present, stated that the equilibrator was really the life of the airship—that it served as a kind of automatic balance.

He stated he believed, from the experience gained, that it is possible for an airship to cross the ocean, and that the Wellman attempt would have been successful under ordinary conditions.

The equilibrator was made up of 29 tanks, connected together, each tank containing 15 gallons of gasoline. He stated that they had a method of getting the tanks up into the ship when gasoline was needed. The tank drawn up was then emptied and refilled with water, secured from the sea by means of a canvas sea bucket.

The equilibrator had a buoyancy of 20 per cent. It was so long that it would go from the top of one wave to the top of another, although during the trip, owing to the heavy weather, it was often out of sight in the water (that is, the end of it was).

Mr. Vaniman stated that the "drag" of the equilibrator was the main detriment, but that if there had been a quiet sea, the story would undoubtedly have been different. He stated that without doubt the equilibrator was too long, as during most of the journey it was hardly ever out of the water.

The balloon was inflated about 30 days before starting from Atlantic City, and the loss of gas was one-half of 1 per cent., caused by percolation through the bag.

The gas bag of the balloon cost originally about $10,000 and its size was increased 31 per cent. for the transoceanic trip. The equilibrator weighed 2 tons, and the entire cost of the apparatus when the start for Europe was made, was probably $50,000.

On being asked what he thought had become of the airship after it was abandoned, Mr. Vaniman stated that when they left it it drifted away, and that the last they saw of it it was practically standing on end. He expressed the opinion that if it continues afloat it may come this way.

Mr. Vaniman stated, in answer to a question, that during the trip the average height of the airship above the water was not more than 100 ft.

In regard to the wireless apparatus, he said that the operator could hear wireless messages for 200 miles from shore, and that they had no difficulty in hearing people talking about them and their trip, but they could not talk back, as their apparatus could send only 50 miles. The wireless worked very satisfactorily, but there was not voltage enough to send messages further than 50 miles. One of the antennae was fastened to the equilibrator, and the other made fast to the car itself. There was a dynamo on board but it only ran when the motors were in operation.

In conclusion, Mr. Vaniman stated that he thought a voyage across the ocean was entirely possible, and that with the experience gained he would not have any hesitation in trying it again. He admitted, however, that the ship would have to be made larger, and decided changes made in the equilibrator, to bring about such a result.

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*From an address delivered before the Aeronautical Society.

BELMONT INTERNATIONAL AVIATION MEET

New World Records at Belmont

Altitude, Johnstone,				9714 ft.
5	Kil.,	Leblanc,	2m. 44.78s.	12th lap
10	"	"	5m. 30.92s.	1st and 2nd lap
20	"	"	11m. 04.78s.	11th to 14th lap
30	"	"	16m. 38.31s.	1st to 6th lap
40	"	"	22m. 12.58s.	1st to 8th lap
50	"	"	27m. 48.70s.	10th to 19th lap
60	"	"	33m. 22.80s.	1st to 12th lap
70	"	"	38m. 55.80s.	1st to 14th lap
80	"	"	44m. 29.50s.	1st to 16th lap
90	"	"	50m. 04.57s.	2nd to 19th lap
100	"	White	1h. 1m. 04.74s.	

¼ hr., Leblanc, 27.04 Kil. (figured)
½ hr., Leblanc, 53.92 Kil. (figured)
1 hr., White, 98.23 Kil. (figured)

Two-man speed for 5 Kil., De Lesseps, 5m. 12.15s.

THE second meeting of its kind in this country, and, of course, by far the greater, was the international tournament conducted at Belmont Park race track, on Long Island, October 22-31, by the Aero Corporation, Ltd., and the Aero Club of America as respects the Gordon Bennett race.

There was great flying, despite the windy weather to be expected at this time of the year—rain the very first day, and no flights at all on the second on account of the wind. It can rank favorably with many of the meets that have been held abroad the past year. At not every foreign meeting have so many new records been made. Perhaps the biggest feature of the meet, and the one that really was the reason for a meet, was the Gordon Bennett race. Only a most unfortunate accident deprived a son of France of the victory; but she can console herself with the honor of the winning of the contest with a French-built aeroplane.

The one other great event of the meet was the placing of the American flag at an altitude higher than an aeroplane has ever taken a nation's banner. It is with the utmost sorrow that we are reminded poor Johnstone can never more defend his title to renown. Hundreds of thousands whose hearts have stood still in delicious awe of his wonderful feats now mourn his loss. Absolutely fearless, a master of his machine, had his life been spared he would have traced his name in fantastic flights in the heavens of the entire world.

Lack of experience and too little time after operations were actually started seem to be the reason for so much friction between aviators at the Belmont meet and the organization conducting the affair.

The aviation committee, consisting of J. C. McCoy, J. A. Blair, Jr., Lyttleton Fox, Major Samuel Reber, U. S. A., and Charles M. Manly, worked most harmoniously together, and to them great credit is due.

The Gordon Bennett.

It was originally planned to have an elimination race to select the American team. On the day set for this, those who were available thought it too windy and did not enter. Matters hung fire until the last moment, when the American team must be named under the rules of that race, and the Aero Club of America named Walter Brookins (Wright 61), J. A. Drexel (Bleriot 50), and Chas. K. Hamilton (110 Curtiss type), with J. A. D. McCurdy (Curtiss 51), J. B. Moisant (Bleriot 50), and Arch Hoxsey (Wright 30) as substitutes. When Brookins had his accident Moisant started in his place.

The French team was Alfred Leblanc (Bleriot 100), Hubert Latham (Antoinette 100) and Emile Aubrun (Bleriot 50), in place of Labouchere, who was previously named.

England had Claude Grahame-White (Bleriot 100), James Radley (Bleriot 50) and Alec. Ogilvie ("Baby Wright" 30).

The distance was 100 kil. (62.13 m.), over a 5-kilometer course. The contestants could start any time between the hours of 8:32 A. M. and 3:32 P. M.

Gordon Bennett Results.

(1) White (100 Bleriot), 100 kil., 1:01:04.74.
(2) Moisant (50 Bleriot), 100 kil., 1:57:44.85.
(3) Ogilvie (30 Wright), 100 kil., 2:06:36.69.
(4) Latham (100 Antoinette), 100 kil., 5:47:53.41.
(5) Leblanc (100 Bleriot), 95 kil., 52:49.70.
(6) Drexel (50 Bleriot), 35 kil., 26:04.08.
(7) Radley (50 Bleriot) made only a lap. Was flagged down as he started after the time limit.
(8) Hamilton (110 Curtiss-type) did not complete first lap. Started after the time limit.
(9) Aubrun (50 Bleriot) did not start.
Timed by the Warner electric timer and the New York Timers' Club.

White Breaks Record.

In the calmest part of the day White started, never having flown the 100 h. p. machine before, at 8:42:39.66 A. M., and finished the course at 9:43:44.40. His best time for a lap, the fourteenth, was 2 m. 55.77 s., a speed of 102.4 k. p. h. (63.59 m. p. h.). White's time for the 100 kil. was 1 h. 1 m. 4.74 s., a mean speed of 98.23 k. p. h. (61 m. p. h.), a new world record for this distance and for one hour. (Leon Morane established a new world record for 100 kil. of 1 h. 6 m. 39 s. at Bordeaux meet in September and made a new record of 90 kil. for one hour at the same meet.)

While he was up Leblanc crossed the line, at 9:00:20. Though with the same horse power, Leblanc's slowest lap was more than 5 seconds faster than White's best. Leblanc's eleventh lap was made in 2 m. 44.78 s., a speed of 109.23 k. p. h. [67.83 m. p. h. Curtiss won last year's Gordon Bennett with a speed of 47.06 m. p. h.] He did not equal Radley's world record speed for 1 mile, made in England, of 75.95 m. p. h., or a mile in 47 2-5 secs. At St. Louis October 14, Leblanc made a speed of 67.9 m. p. h., or 1 mile in 53 sec.

Leblanc Has Wonderful Escape.

Just after finishing the nineteenth lap (95 kil.), at 9:53:09.7 A. M., the unfortunate Leblanc hit a telegraph pole head on, breaking the pole square in two. One cylinder was bent in and minor damage done the engine. The framework and one wing were badly damaged. Leblanc escaped with but a cut. He had been saving his machine for this one event and had the cup almost within his grasp. In winning his elimination race in France for the selection of the French team, Leblanc covered the 100 kil. in 1:19:13 3-5, much slower time than he was making at Belmont.

New World Records by Leblanc.

New world records were made by Leblanc for distances, according to the schedule laid down by the international federation, from 5 and 10 kil., continuing by tens up to and including 90 kil.

The next to start was Alec. Ogilvie, of the British team, with his "baby" Wright 30, at 9:08:53.23 His first was his fastest lap, at a speed of 89.27 k. p. h. (55 m. p. h.). At 9:53:02.20 he had to land on the far side of the course with a bad spark-plug, where he stayed for nearly an hour. Up again, he pluckily kept on, for the full 20 rounds, finishing at 11:15:29.92 A. M.

Latham, of the French team, was the only other to start in the morning, and he went up at 10:58:55.67, before Ogilvie came down. He, too, had trouble and landed at 11:50:52.35 A. M., after making 15 laps, and it was 4:32:19.93 P. M. before he got going again. He finished his full 20 laps at 4:16:49.08.

The wind seemed to increase during the afternoon, and as the time limit (not later than 1½ hrs before sunset) drew near Drexel started in his Bleriot 50, at 3:25:56.53 P. M., Moisant (alternate for Brookins) following at 3:31:35.35, a fraction of a second before the limit.

Drexel (Bleriot 50) finished seven laps at 3:52:00.61 and landed, not to go up again. His very best lap was nearly 7 sec. slower than Ogilvie's (Wright) best.

Moisant was down for over 40 min. on his seventh lap, and finally completed the full course by 5:29:20 20.

Radley (British, with a Bleriot 50), and Chas. K. Hamilton both started after the time limit. Radley was flagged and made only one lap. Hamilton, with his rated 110 h. p. Curtiss-copy, didn't even get around once. Something went wrong with his power plant.

Walter Brookins, the chief hope of the American team, fell to the ground in front of the grandstand before he had given official notification of his intention to start. Four cylinders of his 8-cylinder engine stopped, and he tried to land on the field. He apparently touched all right, but he was spilled out and the machine turned a somersault and landed upside down. His speed was estimated at 80 miles an hour just before he stopped. His racing 61 h. p. Wright was smashed beyond early recall and Brookins was hurried to the hospital. He was not seriously injured.

Aubrun, the third French representative, did not start in the Gordon Bennett at all. It was ruled that those starting in this race would not get the expense money allowed in gathering the aviators for the meet. Aubrun decided that gold was preferable to glory.

Ogilvie Had Speed Over Bleriots.

Had Latham, Ogilvie and Moisant not had to land during the Gordon Bennett race, and Drexel had not quit, their standing would have been different. Latham would have been third, followed by Ogilvie, Drexel and Moisant.

Only the 100 h. p. Gnome Bleriots of White and Leblanc, and the 100 h. p. Antoinette, had more speed than the 30 h. p. Wright of Ogilvie. An addi[illegible] of his time by laps shows much faster time than the 50 h. p. Gnome-engined Bleriots. All the Bleriots and the two Farmans had Gnome engines, and all Bosch magnetos.

Hamilton was unofficially timed for 1 lap (2.5 kil.) in 1:24, a speed of 107.14 k. p. h. (66.53 m. p. h.) which is faster than White's average. The Wright 8-cylinder was timed unofficially in 1:23, which means 108.43 k. p. h. (67.33 m. p. h), and it is not supposed the machine was going its best.

The longest continuous flight of the meet was made by White, 22 laps of the 5 kil. course, or 110 kil. (68.3 m.).

Johnstone Breaks Altitude Record.

The very last flight on October 31, the added day of the meet, was the great achievement of the late Ralph Johnstone in one of the "baby" Wright machines, designed especially for altitude work. He had never flown one of the small machines, and this one was 12 ft. smaller in spread than the standard type. Orville Wright had already tested the machine out and he knew how fast it would climb.

Before long Johnstone was completely out of sight in a clear sky, so high was he. Drexel was his competitor. While they were up other events were run off. The Demoiselles flew their only race of the meet; McCurdy and White had it out for 10 laps, and the Aero Club of America Distance Race was flown.

It was dark before Johnstone and Drexel could be distinguished moving rapidly downward. The stars were all out and were used to locate for others the positions of the high flyers.

It was a moment never to be forgotten. All were wondering if the 10,000 feet which would bring an added prize, had been reached. It was so dark on the ground that a man could not be distinguished a few feet away. In front of the grandstand red fire was burned to aid the two fliers. As the specks up in the blue grew to dots, and then rapidly took shape as the downward rush brought them nearer the earth, Drexel's motor could be heard running. Johnstone's had stopped and he was gliding rapidly. As he landed, we rushed over to read the barograph.

We knew he had broken the world record of 9,186 ft., but just what his actual height was we could not determine in the dark. Then we got the Drexel barograph and we learned that Johnstone had the record for himself.

Statue of Liberty Race.

Moisant won the $10,000 prize for a race around Miss Liberty, on Sunday, October 30, with White (100 h. p. Bleriot) and De Lesseps (50 Bleriot) as competitors. Both White and De Lesseps had made the trip before Moisant started with a machine in which he had never before flown, a 50 Bleriot belonging to Leblanc and which Moisant had just purchased.

De Lesseps started first, and a moment later White crossed the line. Both machines quickly disappeared in the face of the setting sun. After half an hour a speck could be distinguished against big blazing Sol, followed by a second, which was De Lesseps. White had overtaken him.

Soon Moisant got away. Disregarding the less-direct route taken by White and De Lesseps, he flew in a straight line for the statue in New York's harbor, 16.4 miles away, over the town of Jamaica, and over the buildings of Brooklyn, around Stevens' balloon attached to the upper part of the figure of Miss Liberty and back in almost a minute less than White consumed in avoiding densely built Brooklyn.

White immediately protested, saying that he wanted to try again for the prize, the following day. On another trial, taking the same course that Moisant took, with twice the power, White would very likely win and, of course, he would not kick. The race was set down for this day on the day's programme, everyone was free to go after the prize and over any course. Moisant saw fit to take all risks, and seems to be entitled to the award.

Many Features Not on Programme.

Not all the flying was by schedule. The wind was at nearly all times too much for the genial Captain Baldwin, and all his flights were unofficial. Willard, Mars, Ely, and McCurdy made many fine, and some sensational, flights in the late afternoons, silhouetted against the gold and red of the western sunset. Hamilton, too, with his black piratical-looking craft, smoke streaming behind from a flooded engine, seemed to have abnormal speed in the dark of the evening. De Lesseps and the other foreign aviators made many flights purely for the flight itself, sometimes taking along a lady passenger.

Altitude Flights Awe-Inspiring.

The fast-falling nights of late October frequently threw an almost impenetrable shroud about the pin-point of an aeroplane thousands of feet from the earth. Day after day Hoxsey and Johnstone alternated in beating each other out of sight. Four thousand, five, six, seven, and eight thousand feet were made time after time. The only ones up, almost total darkness about the field, discoverable up against the night blue only by those with strong glasses and pointed out by them to less fortunate watchers with the stars for guide-points, these two winged but wingless "birdmen" climbed until the field was blotted out to their sight, save for the blazing gasoline beacons started by the shivering parent birds Wright in front of their nests.

Four new American height records were made at the meet, one of them a world record, as follows:—

Drexel,	7105 feet,	October 24
Johnstone,	7303 feet,	October 25
Johnstone,	8471 feet,	October 27
Johnstone,	9714 feet,	October 31

Johnstone and Hoxsey Fly Backward.

Johnstone and Hoxsey flew to approximately eight and seven thousand feet respectively, on October 27, in a wind which drove them actually backward. Near the ground the wind was blowing at a rate which none but the Wright machines and Latham's Antoinette dared combat. Latham could be seen working with might and main to keep his equilibrium. Johnstone and Hoxsey started for altitude. The higher they flew the less they were able to advance, until at last they could be seen, one keeping just exactly the same distance behind the other, headed into the wind, but going steadily backward away from the field until out of sight. Just imagine taking one step forward and slipping back two. That's what they did.

Hoxsey was driven back to Brentwood, L. I., 25 miles to the east. Johnstone got down at Middle Island, about 42 miles from the grounds. The velocity of the wind at their altitude was figured at between 70 and 80 miles an hour. The next day both men flew back to the grounds.

The Wright machines were nearly always first up every day. Wind had no terrors for them. When there was no prospect of flights by other machines until later in the afternoon the Wright flyers got up and stayed up, though the spectators often came near having heart failure when it appeared as though an extraordinarily tough gust would capsize them.

It is impossible to obtain actual figures on the wind on the day Hoxsey and Johnstone were driven backward. On the ground the Weather Bureau anemometer registered but 16 m. p. h., though there were gusts of twice that velocity. Records made at the Eiffel Tower show four times the velocity in 1,000 ft. of altitude. In Germany and at Blue Hill the records show twice the velocity in this distance upward. At 4:30 on this day the wind blew 30 m. p. h. on the ground.

The management of the meet should congratulate themselves on being favored with such good weather as they did have, for the latter half of October is usually inclined to be much more windy. August and September should be the months for an aviation meet in this section.

Cross Country Flights.

The cross country flights were not very spectacular. The entrant crossed the line and quickly disappeared from sight and for the most part forgotten in watching the flying near at hand. After rounding the balloon at Hicksville, where Leo Stevens had his hydrogen plant and wireless outfit, communicating with the judges' stand, ten miles away, the aeroplane would return and circle the course and land, scarcely noticed by the crowd. On one day the balloon could not be located at all on account of the fog.

In the cross country flight of October 25 McCurdy had to land in a field near Rockville Center. The next day he flew it back to the field.

On one occasion the cross country men lost the balloon in the fog and failed, of course, to round it.

Baldwin and Frisbie Fly from Mineola.

The day before the meet opened J. J. Frisbie flew over from Mineola, a distance of 5 miles, just after sunset. After some argument he was finally allowed to enter the meet. The flight took him directly over the buildings of the fair grounds at Mineola, and the scattering houses and trees on the way. Captain Baldwin flew over the next day with a brand-new machine painted red, with his red rubber cloth surfaces.

The Demoiselles.

The Demoiselles were really the hit of the meet. On only two occasions did they make more than one complete round of the course, on account of motor trouble, but they caused a wave of amusement each time they bumped and bounced across the field for a start. They certainly had great speed when they did fly. They resembled some monster bug without the buzz. One even turned upside down without doing the aviator any damage.

Spectators Got Mixed Up.

It was impossible to keep track after the first lap or two of the standing of any of the aviators in the hourly duration and distance contests, except by following the bulletin board, and then it took several pages of the programme to figure out the hieroglyphics thereon, and in the meantime the machines had made some more laps and it was all off. On the second flying day there were eleven machines in the air at once, sometimes as many as four and five bunched in one place, with a rear-end collision almost inevitable. When only two or three were up at a time people got tired and hied themselves to the ever-crowded bar. Another meet should provide for events of more interest. If, say, three machines were started from a line at a given signal for one or two lap races, the crowd would be on its feet with enthusiasm. For another, start several from a line for a cross country, the first man back to win. The people could then actually tell without a lexicon who won.

A Few Smashes Occurred.

Tod Shriver, limping around the field on crutches, the result of a previous exhibition flight, flew unofficially the opening day and ended by smashing his machine. This put him completely out for the entire week. The day of the Statue of Liberty race Moisant smashed his propeller and damaged his wing by hitting Harmon's Farman just as he was running along the ground for a start. The big Farman had one whole side wrecked. Moisant smashed his machine three days before the meet opened, taking his feet off the rudder control to kick open the gascock.

The second day of the meet, October 23, no one flew. The wind was fearful. White did attempt a flight and got off the ground but had to land shortly. The wind tipped the machine over on its side and there was another job for the repairman. Moisant brought out his Bleriot and before he could get in it it was on its back and broken.

Brookins smashed his 8-cylinder Wright on a preliminary trial.

On the last day of the meet White turned his 100 h. p. Bleriot over in front of the grandstand just as he landed.

Repairs to the smashed aeroplanes were quickly made by the new Lovelace-Thompson Co., at Fort George, New York City.

Clifford B. Harmon did not fly at all officially and his only flights were for his own amusement.

H. S. Harkness did not fly his Antoinette at all during the meet.

ENTRANTS AT BELMONT.

Monoplanes.

C. GRAHAME-WHITE (England)—
Bleriot, 50 Gnome.
Bleriot, 100 Gnome.

JAMES RADLEY (England)—
Bleriot, 50 Gnome.

COUNT DE LESSEPS (France)—
Bleriot, 50 Gnome.

J. B. MOISANT (America)—
Bleriot, 50 Gnome.

J. A. DREXEL (America)—
Bleriot, 50 Gnome.

RENE SIMON (France)—
Bleriot, 50 Gnome.

EMILE AUBRUN (France)—
Bleriot, 50 Gnome.

W. E. McARDLE (England)—
Bleriot, 50 Gnome.

C. AUDEMARS (Switzerland)—
Demoiselle, 30 Clement.

ROLAND GARROS (France)—
Demoiselle, 30 Clement.

ALFRED LEBLANC (France)—
Bleriot, 50 Gnome.
Bleriot, 100 Gnome.

HUBERT LATHAM (France)—
Antoinette, 50 Antoinette.
Antoinette, 100 Antoinette.

EUGENE ELY (America)—
Curtiss, 65 Curtiss.

RENE BARRIER (France)—
Bleriot, 50 Gnome.

HARRY S. HARKNESS (America)—
Antoinette, 50 Antoinette.
Antoinette, 100 Emerson.

Biplanes.

C. GRAHAME-WHITE (England)—
Farman, 50 Gnome.

*CAPT. T. S. BALDWIN—
Baldwin, 50 Curtiss

*CHAS. K. HAMILTON—
Curtiss-type, 61 Christie.
Curtiss-type, 51 Hall-Scott.

*CLIFFORD B. HARMON—
Farman, 50 Gnome.

*J. A. D. McCURDY—
Curtiss, 50 Curtiss.

*J. C. MARS—
Curtiss, 50 Curtiss.

*EUGENE ELY—
Curtiss, 50 Curtiss.

*WALTER BROOKINS—
Wright machines. See American schedule.

*ARCH HOXSEY—
Wright machines. See American schedule.

*RALPH JOHNSTONE—
Wright machines. See American schedule.

*P. O. PARMALEE—
Wright machines. See American schedule.

*ALEC. OGILVIE—
Wright machines. See American schedule.

‡*J. C. TURPIN—
Wright machines. See American schedule.

*TOD SHRIVER—
Curtiss-type, 30 Kirkham.

*C. F. WILLARD—
Curtiss, 50 Curtiss.

*J. J. FRISBIE—
Curtiss-type, 51 Hall-Scott.

*J. C. Turpin and *P. O. Parmalee qualified for pilot licenses. ‡Turpin did not fly officially. Eugene Ely had a Curtiss monoplane, but it was not flown officially. Harkness did not fly. *Walter Christie had a monoplane with two engines, but not entered in meet. All aeroplanes in the meet, except the Wrights, were equipped with Bosch ignition.

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* Americans.

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OFFICIAL RESULTS TABULATED

C. GRAHAME-WHITE.

CONTEST	WON	DIST. MADE	TIME	POSITION
October 22—				
1st Hrly Dist	$250	50.0K	57:37.20	1
2nd Hrly Dist	250	47.5K	56:22.00	1
Daily Tot Dur	500	......	2:00:00.00	1
October 24—				
1st Hrly Dist	....	50.0K	55:18.20	5
2nd Hrly Dist	$100	52.5K	57:58.20	2
Daily Tot Dist	250	......	1:56:48.80	2
October 25—				
1st Hrly Dist	$100	5.0K	6:37.55	2
2nd Hrly Dist	250	35.0K	31:16.85	1
Daily Tot Dur	....	......	41:48.05	5
October 26—				
Special Dist	....	20.0K	18:04.75	4
October 29—				
Gordon Bennett	$5,000	100.0K	1:01:04.74	1
October 30—				
Hourly Dist	....	27.5K	17:00.09	5
Daily Tot Dur	....	......	18:24.23	5
G'd Speed M'plane	No prize	25.0K	14:56.13	1
Passenger carrying (Carried 326½ lbs.)	$400	5.0K	6:04.05	2
Statue of Liberty	....	32.8M	35:21.30	2
October 22-30—				
Total Dur	$1,000	......	4:57:01.08	3
Total Dist	1,000	267.5K	....	2
Fastest Flight	1,500	10.0K	6:02.16	1
October 31—				
Speed Race	$3,000	25.0K	11:34.10	1
Total Winnings	$13,600			

JOHN B. MOISANT.

October 22—				
1st Hrly Dist	$100	35.0K	51:02.40	2
2nd Hrly Dist	100	35.0K	49:32.10	2
Cross Country	500	20.0M	39:11.80	1
Daily Tot Dur	250	......	1:42:10.80	2
October 25—				
Cross Country	$250	20.0M	58:25.95	2
October 29—				
Gordon Bennett	....	100.0K	1:57:44.85	2
October 30—				
Hourly Dist	$100	70.0K	54:34.05	2
Daily Tot Dur	250	......	54:56.85	2
Statue of Liberty	10,000	32.8M	34:38.84	1
October 22-30—				
Total of Dur	....	......	2:37:07.65	5
Total of Dist	....	140.0K	....	4
Fastest Flight	....	10.0K	7:28.09	6
October 31—				
A. C. A. Dist	$2,000	135.0K	1:43:23.80	1
Total Winnings	$13,550			

RALPH JOHNSTONE.

October 24—				
1st Hrly Dist	$ 50	52.5K	56:43.00	3
2nd Hrly Dist	....	45.0K	46:52.80	5
Daily Tot Dur	100	......	1:47:44.40	3
October 25—				
1st Hrly Alt	....No barograph			3
2nd Hrly Alt	$250	7303ft	....	1
Daily Tot Dur	375	......	2:00:00.00	..
October 26—				
Special Alt	$100	5813ft	....	2
October 27—				
Hrly Alt	$250	8471ft	....	1
Daily Tot Dur	283.33	......	1:00:00.00	..
October 29—				
1st Special Alt	$250	3235ft	....	2
2nd Special Alt	250	4091ft	....	2
October 22-30—				
Total Dur	$500	......	4:47:44.40	4
Total Dist	....	97.5K	....	6
Grand Alt	2,000	8471ft	....	1
Fastest Flight	....	10.0K	10:08.00	10
October 31—				
Special Grand Alt	$5,000	9714ft	....	1
Total Winnings	$9,408.33			

HUBERT LATHAM.

CONTEST	WON	DIST. MADE	TIME	POSITION
October 24—				
1st Hrly Dist	....	12.5K	11:01.85	6
2nd Hrly Dist	$250	52.5K	47:56.40	1
Daily Tot Dur	....	......	59:03.25	6
October 25—				
1st Hrly Dist	$250	47.5K	57:31.00	1
2nd Hrly Alt	50	3772ft	....	3
Daily Tot Dur	100	......	1:00:00.00	3
October 26—				
Cross Country	$250	20.0M	32:14.71	2
Special Dist	250	42.5K	36:22.45	1
October 27—				
Hrly Dist	$250	35.0K	55:24.15	1
Daily Total Dur	283.33	......	1:00:00.00	..
October 28—				
1st Hrly Dist	$250	10.0K	14:00.25	1
2nd Hrly Dist	250	30.0K	43:59.40	1
Daily Tot Dur	250	......	1:11:34.60	2
October 29—				
Gordon Bennett	....	100.0K	5:47:53.41	4
October 30—				
Hrly Dist	$250	82.5K	58:48.41	1
Daily Tot Dur	500	......	58:51.74	1
October 22-30—				
Total Dur	$1,500	......	5:09:29.59	2
Total Dist	1,500	270.0K	....	1
Grand Alt	....	3772ft	....	7
Fastest Flight	1,000	10.0K	6:26.07	2
October 31—				
A. C. A. Dist	$1,000	87.5K	1:04:36.00	2
Total Winnings	$8,183.33			

ARCH HOXSEY.

October 22—				
1st Hrly Alt.	$250	742ft	....	1
2nd Hrly Alt	250	673ft	....	1
Daily Tot Dur	100	......	31:35.40	3
October 24—				
1st Hrly Dist	....	52.5K	57:10.60	4
2nd Hrly Dist	....	47.5K	55:20.00	4
Daily Tot Dur	$500	......	1:57:13.20	1
October 25—				
1st Hrly Alt	$100	5796ft	....	2
2nd Hrly Alt	100	4882ft	....	2
Daily Tot Dur	375	......	2:00:00.00	..
October 26—				
Special Alt	$250	6233ft	....	1
October 27—				
Hrly Alt	$100	6903ft	....	2
Daily Tot Dur	283.33	......	1:00:00.00	..
October 28—				
1st Hrly Alt	$250	6705ft	....	1
Daily Tot Dur	100	......	57:33.25	3
October 29—				
1st Special Alt	$500	5146ft	....	1
2nd Special Alt	500	4644ft	....	1
October 22-30—				
Grand Alt	$250	6903ft	....	4
Fastest Flight	....	10.0K	10:16.40	11
Total Dur (And Amateur Cup)	3,000	......	6:29:21.85	1
Total Dist	....	100.0K	....	5
Total Winnings	$6,908.33			

EMILE AUBRUN.

October 24—				
1st Hrly Dist	$100	67.5K	48:10.65	2
2nd Hrly Dist	50	50.0K	35:53.40	3
Daily Tot Dur	....	......	1:26:51.55	4
October 26—				
Cross Country	$500	20.0M	28:08.75	1
October 30—				
Hrly Dist	....	30.0K	21:13.35	4
Daily Tot Dur	....	......	21:13.35	4
Gr Sp M'pl Elim	No prize	25.0K	16:37.05	3
Cross Country	$250	20.0M	21:52.50	3
October 22-30—				
Total Dur	....	......	1:48:04.90	6
Total Dist	$500	147.5K	....	3
Fastest Flight	500	10.0K	6:50.00	3
October 31—				
Speed Race	$500	25.0K	16:37.00	3
Total Winnings	$2,400			

COUNT DE LESSEPS.

CONTEST	WON	DIST. MADE	TIME	POSITION
October 22—				
2nd Hrly Dist	$100	628ft	....	2
Daily Tot Dur	....	.....	3:47.80	5
October 24—				
1st Hrly Alt	$250	5615ft	....	1
Daily Tot Dur	....	....	27:24.80	7
October 25—				
1st Hrly Alt	$250	6931ft	....	1
Daily Tot Dur	....	.....	46:05.80	4
October 26—				
Cross Country	Did not round the balloon			4
Special Alt	$50	2549ft	....	3
October 28—				
1st Hrly Dist	$50	2.5K	2:36.35	3
2nd Hrly Alt	100	2240ft	....	2
Daily Tot Dur	....	.....	17:21.45	4
October 30—				
Passenger carrying	$1,000	5.0K	5:12.15	1
(Carried 356½ lbs)				
Statue of Liberty	....	32.8M	39:38.50	3
October 22-30—				
Total Dur	....	.....	1:34:39.85	8
Total Dist	....	2.5K	....	16
Grand Alt	500	6931ft	....	3
Total Winnings	$2,300			

A. J. DREXEL.

October 22—				
1st Hrly Dist	$50	25.0K	19:39.80	3
2nd Hrly Alt	50	519ft	....	3
Daily Tot Dur	....	.....	20:31.80	4
October 24—				
1st Hrly Dist	$250	70.0K	54:33.40	1
2nd Hrly Alt	250	7105ft	....	1
Daily Tot Dur	....	.....	1:02:16.20	5
October 26—				
Cross Country	$100	20.0M	43:07.75	3
October 29—				
Gordon Bennett	....	35.0K	26:04.08	6
October 22-30—				
Total Dur	....	.....	1:22:48.00	9
Total Dist	....	95.0K	....	7
Grand Alt	$1,000	7105ft	....	2
Fastest Flight	....	10.0K	7:31.20	7
October 31—				
Special Grand Alt	....	8373ft	....	2
Total Winnings	$1,700			

J. A. D. McCURDY.

October 24—				
Gr Sp Bip Elim	No prize	25.0K	19:19.20	1
October 25—				
2nd Hrly Dist	$100	30.0K	21:43.35	2
Daily Tot Dur	....	.....	23:09.85	7
October 30—				
Hrly dist	$50	45.0K	32:35.99	3
Daily Tot Dur	100	.....	32:37.16	3
Special Dist	100	15.0K	11:13.30	2
October 22-30—				
Total Dur	....	.....	55:47.01	10
Total Dist	....	75.0K	....	8
Fastest Flight	....	10.0K	7:06.95	4
October 31—				
Speed Race	$1,000	25.0K	21:04.20	2
Total Winnings	$1,350			

JAMES RADLEY.

October 24—				
2nd Hrly Dist	....	5.0K	3:38.20	6
Daily Tot Dur	....	.....	4:15.80	10
October 25—				
Cross Country	$500	20.0M	19:18.45	1
October 29—				
Gordon Bennett	Up but for		5:13.28	
October 30—				
Hrly Alt	$50	614ft	6:19.49	3
Daily Tot Dur	....	.....	6:19.49	8
Special Dist	250	25.0K	17:32.45	1
Grand Speed Monoplane Elimination	No prize	5.0K	3:20.77	1
Cross Country	$500	20.0M	20:05.60	1
October 22-30—				
Total Dur	....	.....	11:05.29	13
Total Dist	....	5.0K	....	14
Grand Alt	....	614ft	....	11
Total Winnings	$1,300			

P. O. PARMALEE.

CONTEST	WON	DIST. MADE	TIME	POSITION
October 26—				
Special Dist	$100	40.0K	57:37.03	2
October 28—				
1st Hrly Alt	$100	3819ft	....	2
2nd Hrly Alt	250	3636ft	....	1
Daily Tot Dur	500	.....	1:40:25.40	1
October 22-30—				
Total Dur	....	.....	1:40:25.40	7
Grand Alt	....	3819ft	....	6
Total Winnings	$950			

RENE SIMON.

October 25—				
2nd Hrly Dist	....	10.0K	7:23.50	4
Daily Tot Dur	....	.....	7:23.50	8
October 26—				
Special Dist	....	15.0K	11:40.90	5
October 30—				
Hrly Alt	$250	959ft	11:20.80	1
Daily Tot Dur	....	.....	11:20.80	6
Gr Sp Mpl Elim	No prize	25.0K	16:54.80	3
October 22-30—				
Total Dur	....	.....	18:44.30	12
Total Dist	....	10.0K	....	11
Grand Alt	....	959ft	....	8
Fastest Flight	....	10.0K	7:23.50	5
October 31—				
A. C. A. Dist	$500	60.0K	50:13.00	3
Total Winnings	$750			

WALTER BROOKINS.

October 24—				
1st Hrly Dist	....	7.5K	5:30.85	7
1st Hrly Alt	$100	4882ft	....	2
Daily Tot Dur	....	.....	5:30.85	9
October 26—				
Special Dist	$50	30.0K	22:40.80	3
October 27—				
Special Alt	$250	742ft	....	1
October 22-30—				
Total Dur	....	.....	5:30.85	17
Total Dist	....	7.5K	....	12
Grand Alt	....	4882ft	....	5
Total Winnings	$400			

EUGENE ELY.

October 22—				
1st Hrly Alt	$100	404ft	....	2
2nd Hrly Alt	....	206ft	....	4
October 24—				
1st Hrly Alt	....	412ft	....	4
October 30—				
Hrly Dist	....	10.0K	8:20.81	6
Daily Tot Dur	....	.....	8:20.81	7
October 22-30—				
Total Dur	....	.....	8:20.81	14
Total Dist	....	10.0K	....	10
Grand Alt	....	412ft	....	12
Fastest Flight	....	10.0K	8:20.81	8
Total Winnings	$100			

CHAS. F. WILLARD.

October 24—				
1st Hrly Alt	$50	629ft	....	3
Daily Tot Dur	....	.....	6:36.80	8
October 30—				
Special Dist	50	5.0K	5:22.35	3
October 22-30—				
Total Dur	....	.....	6:36.80	15
Grand Alt	....	629ft	....	10
Total Winnings	$100			

C. AUDEMARS.

October 28—				
1st Hrly Dist	$100	2.5K	2:24.50	2
Daily Tot Dur	....	.....	2:24.50	5
October 22-30—				
Total Dur	....	.....	2:24.50	19
Total Dist	....	2.5K	....	15
October 31—				
Sp Dem Race	No prize	7.5K	6:05.20	1
Total Winnings	$100			

J. C. MARS.

CONTEST	WON	DIST. MADE	TIME	POSITION
October 24—				
Gr Sp Blp. Elim	No prize	25.0K	22:51.15	2
October 25—				
2nd Hrly Dist	$50	30.0K	30:47.40	3
Daily Tot Dur	....	.....	31:15.10	6
October 26—				
Special Dist	....	2.5K	2:02.80	6
October 22-30—				
Total Dur	....	.....	31:15.10	11
Total Dist	....	30.0K	....	9
Fastest Flight	....	10.0K	8:40.55	9
October 31—				
A. C. A. Dist	....	2.5K	2:21.80	4
Speed Race	....	Did not start		
Total Winnings	$50			

ALFRED LE BLANC.

CONTEST	WON	DIST. MADE	TIME	POSITION
October 25—				
2nd Hrly Dist	....	7.5K	5:18.85	5
Daily Tot Dur	....	.....	5:37.50	9
October 26—				
Cross Country	Did not round the balloon			
October 29—				
Gordon Bennett	....	95.0K	52:49.70	5
October 22-30—				
Total Dur	....	.....	5:37.50	16
Total Dist	....	7.5K	....	13

RENE BARRIER.

CONTEST	WON	DIST. MADE	TIME	POSITION
October 30—				
Hrly Alt	$100	932ft	3:35.10	2
Daily Tot Dur	....	.....	3:35.10	9
October 22-30—				
Total Dur	....	.....	3:35.10	18
Grand Alt	....	932ft	....	9
Total Winnings	$100			

ROLAND GARROS.

CONTEST	WON	DIST. MADE	TIME	POSITION
October 31—				
Spec Dem Race	No prize	5.0K	4:02.20	2

ALEC. OGILVIE.

CONTEST	WON	DIST. MADE	TIME	POSITION
October 29—				
Gordon Bennett	....	100.0K	2:06:26.69	3

J. J. FRISBIE.

CONTEST	WON	DIST. MADE	TIME	POSITION
October 24—				
Gr Sp Blp Elim	No prize	5.0K	4:30.21	
(Smashed up on 3rd round)				

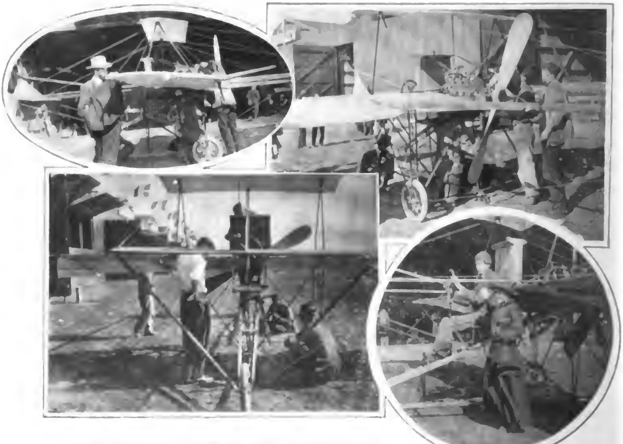
CHAS. K. HAMILTON.

CONTEST	WON	DIST. MADE	TIME	POSITION
October 29—				
Gordon Bennett	Did not finish a lap			

Note.—In the above schedule K equals kilometers, M equals miles. Time is expressed in hours, minutes, seconds, and hundredths of a second. Only distances actually covered by each contestant in each contest is given, not necessarily the distance to be covered under the rules.

In these figures "total distance" and "total duration" do not mean exactly what the words say. Only time and distance in the "hourly" distance, duration and altitude contests counted in the grand total. Time up in "special altitude" or "special distance" contests did not count for totalization.

The Mechanics' Prize was not awarded, as the aviators failed to furnish a list of their mechanics under the rules. Total winnings in the meet, $63,249.99. The Wright Company was paid $25,000 for the license. The amount of "expenses" allowed contestants is not known.



Curtiss Monoplane at Belmont. Built for Bennett Race

Until the last moment before the meet, it seems, none of the Curtiss aviators expected to be present. Almost the last thing before the meet opened expense money was guaranteed and the aviators hustled to get their machines to the track. But none of the machines had tanks large enough to go after hourly distance and duration prizes, nor could any make the speed of the Bleriots, unless perhaps McCurdy's, which had special light Naiad cloth both sides of the planes and flatter ribs than standard. The wind, too, was against Mars, Ely, McCurdy and Willard. The Curtiss machines have more surface than the Bleriots. At fast speed a large machine feels the force of the wind more, it is claimed, the theory working out that a small machine at fast speed is equivalent to a large machine at slow speed, as far as wind trouble is concerned; but large surface and fast speed both make the machine very susceptible to variations in the wind.

Object to Gordon Bennett Course.

Previous to the running of the Gordon Bennett many objections were made by the foreign contestants to the course, which was claimed to be dangerous and not at all in accordance with requirements for safety demanded by the International federation. This course came very close to houses and other buildings and trees, and was over very uneven ground. Upon the demand of the French competitors several minor dangers were removed, such as trees. M. Gasnier, the delegate of the French club to the contest, has issued a letter stating that he complained of conditions to Cortlandt F. Bishop and found his objections coincided with those of the club president, who it is reported by M. Gasnier, had "kicked" without result to the aviation committee of the meet.

It is believed that since the meet the course has been surveyed by representatives of one of the French contestants. Whether any formal protest will be made remains to be seen.

Royal Aero Club Protests.

On November 15th the Royal Aero Club warned the Aero Club of America by cablegram that it was protesting the award made to Moisant in the Statue of Liberty contest to the international federation. This body will not meet for nearly a year now, and it is possible the prize may be held up all that time. Graham-White forwarded a statement of his view of the contest to his own club, together with a copy of the rules. There was much friction between aviators and the aviation committee, but after the meet everything seemed to have been forgotten and buried. White himself said he had nothing to say as to his treatment, except on one point, and that was the constant changes in the rules covering the various contests.

	MAKE	SURF.	MOTOR*	COOLED	PROPELLER		RADIATOR	TIRES	CLOTH	IGNITION	WEIGHT	LANDING DEVICE
OGILVIE	Wright	145	30.6 4cyl Wright	Water	Wright	———	Wright	Hartford	———	Mea	610 lbs.	Skid & 4 wheels
BROOKINS	Wright	480	30.6 4cyl Wright	Water	Wright	9' about	Wright	Hartford	———	Mea	826 lbs.	Skid & 4 wheels
JOHNSTONE	Wright	480	30.6 4cyl Wright	Water	Wright	9' about	Wright	Hartford	———	Mea	826 lbs.	Skid & 4 wheels
HOXSEY	Wright	184	30.6 4cyl Wright	Water	Wright	———	Wright	Hartford	———	Mea	620 lbs.	Skid & 4 wheels †
PARMALEE	Wright	145	61.2 8cyl Wright	Water	Wright	———	Wright	Hartford	———	Mea	780 lbs.	Skid & 4 wheels
MARS	Curtiss	224	51.2 8cyl Curtiss	Water	Curtiss	6' × 6'	El Arco	Diamond	Baldwin	Bosch	600 lbs.	3 wheels
ELY	Curtiss	224	51.2 8cyl Curtiss	Water	Curtiss	6' × 6'	El Arco	Hartford	Baldwin	Bosch	600 lbs.	3 wheels
McCURDY	Curtiss	224	51.2 8cyl Curtiss	Water	Curtiss	6' × 6'	El Arco	Goodrich	Naiad	Bosch	600 lbs.	3 wheels
WILLARD	Curtiss	304	51.2 8cyl Curtiss	Water	Curtiss	7½ × 5¼	El Arco	Goodrich	Baldwin	Bosch	700 lbs.	3 wheels
HAMILTON	Curtiss Type	259	61 8cyl Christie	Water	Chelsea	8' × 9'	A-Z	Goodyear	Baldwin	Bosch	1000 lbs.	3 wheels
" ✚	Curtiss Type	224	51.2 8cyl Hall-Scott	Water	Hall-Scott	6' × 7'	H-S	Goodyear	Goodyear	Bosch	600 lbs.	3 wheels
BALDWIN	Baldwin	300	51.2 8cyl Curtiss	Water	Gibson	7' × 6'	El Arco	Goodrich	Baldwin	Bosch	750 lbs.	3 wheels
SHRIVER	Curtiss Type	300	30 6cyl Kirkham	Water	Chelsea	7' × 4½'	El Arco	Penna.	Baldwin	Bosch	800 lbs.	3 wheels
FRISBIE	Curtiss Type	224	51.2 8cyl Hall-Scott	Water	H-S	7'6" × 5'	El Arco	Hartford	Baldwin	Bosch	640 lbs.	3 wheels

✚ Christie motor rated by maker at 110 hp.; Hall-Scott at 80. *A.L.A.M. rating. † Altitude machine. Wright radiators vertical tube. El Arco and A-Z honeycomb type. Only other American made machine, Ely's Curtiss Mono.

American-Built Machines at Belmont

The Aero Club of America disclaims any connection with the Belmont meet, except the Gordon Bennett race. All other events of every kind were under the control of the tournament, which was financed and handled by the Aero Corporation, Limited, a stock company, with $500 capital stock. The directors named in the certificate of incorporation are Cortlandt F. Bishop, Charles Jerome Edwards, A. H. Forbes, Samuel H. Valentine and Alan R. Hawley. The stock in this company is supposed to be turned over to the membership corporation, Aero Club of America.

It is a question whether any aero body in this country has affiliation with the F. A. I. The Aero Corporation, Ltd., is the legal successor of the original stock company, the Aero Club of America, which signed the affiliation agreement. The Aero Corporation, having no membership, cannot rightfully be a representative and comply with the terms of the agreement. If the new Aero Club of America, membership corporation, has not made a new agreement, it would seem that there is no accredited representative in this country.

The Cause for the Protest.

A schedule of events was announced for the second day of the meet, Sunday, October 23, as well as for the remaining days. This day was very windy indeed and no flights could be made. The meet was advertised to end Sunday night, the 30th of October. To make good to the public for the bad Sunday, the meet was continued on Monday, the 31st.

Previous to the 30th it was not clearly determined whether the first Sunday's program would be carried out officially on the 31st or not. Someone of the management brought up a clause of the F. A. I. rules, which provided that official events must end on the date advertised as the finish of the meeting, or Sunday, the 30th. Therefore, in announcing to the aviators the schedule for the 31st it was stated in the bulletins that this day's contests were special ones for special prizes. The aviators had this bulletin Saturday night or Sunday morning.

When Graham-White found the Statue of Liberty race had been awarded to Moisant, he protested and desired to try for it again on Monday, the added day. He was advised that this was impossible, but that if he liked he could make the same flight, with all officials for timing and so forth, as a basis on which he might make an appeal to the F. A. I. if he so liked. White did not accept this offer.

Drexel, who did not compete for this prize, took White's part and protested against the alleged unsportsmanlike conduct of the race by the management in letters to the newspapers.

On November 1 the Aero Club of America held a meeting of its governors and considered the public protest of Drexel, who was one representative of the club in the Gordon Bennett but did not complete the course, and the matter of asking his resignation and cancelling his pilot license was also taken up. During the meeting Drexel's resignation was received, handed in on his own account. This was laid on the table.

On the night of the 31st, while the Aero Club was holding its dinner to the aviators, Drexel had a little dinner of his own at another hotel, coming to the club dinner later in the evening with the other aviators and Graham-White, who was presented with the Gordon Bennett trophy for his own club. This opposition dinner created no little comment on the part of club members as to the discourtesy shown the meet management and the club.

The point at issue seems to be whether or not the meet officially closed on the 30th. If there is a clause in the international rules covering this point, as the management claims, then there seems to be no reason for complaint, unless the aviators had not proper notice of this on Sunday, the 30th.

This statement was made by the board concerning Mr. Drexel:

> Charges are being prepared against J. Armstrong Drexel in connection with his conduct prior to the starting in the Gordon Bennett international aviation cup race as a representative of the Aero Club of America, as well as his conduct in withdrawing from said race when having completed less than one-quarter of the distance; as well as the statements emanating from him and appearing in to-day's newspapers attacking the good faith and honor of the other members and officers of the club.

BALTIMORE AVIATION MEET

By R. F. Patterson.

Baltimore Results.

Duration.

Latham	3:53:31 1-5
Drexel	1:59:23 2-5
De Lesseps	1:55:47 3-5
Hoxsey	1:21:46 2-5
Ely	7:40 1-5
Willard	5:30
Radley	3:31 3-5

Cross Country (about 18 M.).

Drexel	23:34 4-5
De Lesseps	26:15
Latham	28:58

Bomb Dropping.

Latham	15 points
Drexel	6 points

Passenger Carrying.

De Lesseps	16:48 2-5

Altitude.

Hoxsey	5,330 ft.
Drexel	4,855 ft.
Latham	2,373 ft.
De Lesseps	1,722 ft.

Baltimore Sun $5,000 Prize.

Latham, only entrant, time 42:10 1-5, flight over the city of Baltimore.

The prize money was divided in a manner said to have been agreeable to the aviators, though not in accordance with the announced plan, owing to the many interferences of the weather with the programme during the meet.

THE Baltimore Aviation Meet, under the auspices of the B. & O. R. R. at Halethorp, a few miles outside of Baltimore, opened Nov. 2nd, just after the close of the Belmont meet. This gave the promoters a large number of aviators to select from. The men taking part were: Latham, De Lesseps, Radley, Drexel, C. F. Willard, Eugene Ely and Arch Hoxsey.

About 7,000 saw the first flights. Willard was amusing the crowd by pivoting about a particular pylon when someone caught sight of what he thought was an enormous bird flying for the grounds. It proved to be Radley flying over from where he had assembled his machine a mile off from the grounds. Willard kept on, and was in the air some twenty minutes. Ely raced Willard in a speed test, and later Drexel, Ely and Willard went up for altitude. After the shower, Drexel and Radley flew across country. After a large part of the crowd had gone and it was almost dark, Count de Lesseps appeared in the air. He also had flown over from the Pennsylvania station.

The next day it rained and snowed, and that evening a gale blew down the tents where eight or more machines were stored, letting the wet canvass and snow fall on top of the machines. Latham and Hoxsey were not able to get their machines to Baltimore in time for the opening day, so missed the disaster. The machines of Ely, Willard and Radley were damaged so much that they had to be entirely rebuilt.

On account of the storm, the meet was postponed until the week beginning November 6, and lasting up to the 12th. On the 6th Latham made his first flight in Baltimore. This lasted twenty minutes, and he had to fight a strong wind all the time. He made two other flights, in one going to 1,000 ft. Again, as most of the crowd had gone, Drexel made an altitude flight, the wind having subsided to almost a dead calm. He was up nearly out of sight, and the motor could not be heard any more. His descent was practically one long glide until within two hundred feet from the ground, when he made a long circle and landed near the grand stand from where he had ascended ten minutes before.

Hoxsey had assembled his four-cylinder "Baby" Wright at the Pennsylvania station during the morning of the 7th, and flew across to the field with the breeze behind him. He circled the grounds and was intending to land, but the wind had increased its speed so much, he was unable to land at the moment, and was forced to climb again to clear trees and make a second circle. Noticing a clear space, he endeavored to try a landing, without knowing the nature of the ground, which was being thawed out by the sun, and disregarding the speed of his machine, striking the ground so hard and at such speed, his wheels sticking in the mud, they folded back underneath, allowing the machine to go face down and roll over. Apparently Hoxsey had been thrown forward and clear of the machine when the wheels first struck.

Latham Flies Over Baltimore.

Contrary to general expectations, as the wind was strong, Latham went up and flew over Baltimore, after making two circuits of the course. The flight lasted 42 minutes, until he landed at the field. This won a $5,000 prize offered by a local newspaper. In the afternoon, Drexel, Count de Lesseps and Latham entertained the people with numerous flights.

The feature of the next day was the wind fighting of Hoxsey and Latham. The breeze threatened to blow over the sheds, as it did the tents the previous week. With the motor shut off, Hoxsey again broke his running gear in landing. When the wind had dropped somewhat, Drexel and De Lesseps came up and flew.

Hoxsey in Dangerous Glide.

On the 9th, in making a great altitude flight in the "Baby" Wright altitude machine, which he had not flown before until the Baltimore meet, Hoxsey met with an unfortunate landing. After reaching 5,330 ft., he noticed his engine missing fire, and started downward. Those who were watching closely noticed that he made a straight point downward for about 2,000 ft. and then began climbing again for another moment only. His engine had then stopped dead, and down he came at terrific speed, and at a very steep angle. All thought that he had lost control and would be dashed to pieces at the end of the 3,000 ft. drop. The small supporting surface on this machine makes it impossible for one to do more than to glide at a steep angle or travel on a parallel line at a fast rate. Hoxsey aimed for a farm about 1½ miles from the field, where he landed in a potato patch safely. He was running so fast that he was unable to stop until he had crossed a road and rolled into a wheat field with a plunge which eventually upset the machine on top of him, damaging it slightly. Fortunately Hoxsey received no injuries.

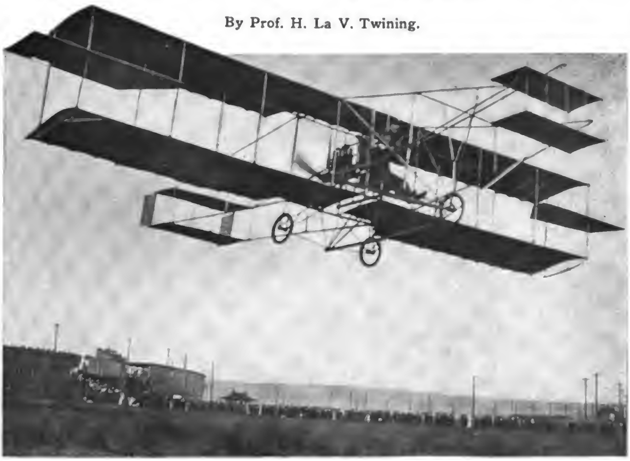
He came down so swiftly that few of the people present who saw him could follow his progress for any distance, and as a forest intervened between the farm and the aviation field, no one knew whether he was hurt or not until fully forty minutes later, when an auto brought him back to the grounds. Other flights were made that day by Latham, Drexel, De Lesseps, Ely, Willard and Radley. This was the best day thus far, four machines being in the air at once.

The 10th saw another storm, which cleared sufficiently for Latham, Drexel, De Lesseps and Radley to bring out their machines. De Lesseps carried several army and navy officers from Washington. Bomb throwing was the feature of the day, and caused much cheering and amusement until half past three, when Hoxsey was seen far off in the distance flying towards the field with one of the big machines which had been lost in transit. The Wright aviators seemed to be able to do with the big machines any form of flying common to the birds. The public also witnessed much the same flying by Willard in his famous "Banshee" (large-sized Curtiss), which was wrecked during the storm at Baltimore. This was Hoxsey's day, with his various spiral curves, sharp downward glides and hurdle jumping. Latham and Drexel did most of the bomb throwing, which interested the army and navy men exceedingly. At 4:30 on this day all the machines were rushed off the field in a great hurry as another storm came up. Two records were made. Latham bet McArdle, who is Drexel's partner, that he could go up in his machine and hit a target on the ground with a revolver. He made eight shots, and two hit the target, one in the inner circle. That meant some good work, for the wind was quite high. Count De Lesseps took an army officer in his monoplane,

(*Continued on page 213*)

LOS ANGELES NOVICE MEET

By Prof. H. La V. Twining.



C. F. Walsh in Flight at Los Angeles

THE Novice meet of the Aero Club of California was held as scheduled, on the 22d and 23d of October at the Los Angeles aerodrome.

All machines without motors were wheeled out and lined up along the paddock. Saturday afternoon at 3 o'clock the program was opened by a towing flight by Jack Cannon. Considerable difficulty was experienced, owing to the lack of power on the part of the towing automobile. After several attempts, it was exchanged for a more powerful automobile, a Stoddard Dayton, 72 h. p., driven by Mortimer, a member of the club. Owing to rains some days previous the ground was slippery and complete circles were not made, but short flights were obtained. Inside the motordrome the other machines developed engine troubles and did not attempt to fly.

C. F. Walsh, J. J. Slavin and B. F. Roehrig had housed their machines in a tent outside of the circular track. At 4 o'clock Mr. Walsh wheeled out his machine and made a short flight of one minute.

After alighting he arose again and flew with the wind back to the starting point, making the same distance in half the time. His third flight lasted four and one-quarter minutes, during which time he made three circuits of the course, this being the first time that he had made a circular flight.

On the next day, Sunday, Jack Cannon made a good towing flight inside of the aerodrome, circling the course three times, remaining in the air three minutes. Outside of the aerodrome Mr. Walsh made two attempts for a quick start, leaving the ground in 150 ft. the first time, and 128 ft. the second time.

He made two other flights, remaining in the air 1½ minutes the first time, and 7 minutes the second time, encircling the course four times.

B. F. Roehrig failed to qualify as he did not get his machine ready in time.

J. J. Slavin brought his machine out of the tent. It was a new one and he had just finished it. Everything was apparently in trim. He started his engine and when the signal to let go was given, he rushed over the ground at a high speed and jumped into the air with ease. His machine went up rapidly but did not lose headway. It listed to one side, and, after reaching a height of some 35 ft., as estimated by the onlookers, it turned toward the listing side and came to the ground on a slightly uneven keel, breaking the running gear. The listing was caused by a defective arrangement of the lever controlling the tilting of the planes. Both Roehrig and Slavin have Elbridge engines.

Four cups were put up as prizes: The "Examiner" cup, for distance; the San Diego cup, for height; the Leonard-Smith cup, for flight in a circle, and the Whitley cup, for duration.

Forty per cent of sixty per cent. of the gross gate receipts were to be distributed as cash prizes. When Slavin shot into the air many thought he had won the height prize, but the contest committee awarded it to Walsh on his flight of the day previous.

C. F. Walsh was awarded all of the cups, as he was the only one to make sustained flights. One hundred and sixty-one dollars were distributed in cash prizes, Mr. Walsh winning all of the first events and Mr. Slavin coming in for second events. Inside of the aerodrome Jack Cannon was awarded the prizes for towing flight including height, distance and duration.

Some 1,200 people were in attendance on the two days.

Although the novice meet was a small affair yet it was eminently successful both financially and otherwise. In a year the club members have made great progress, all of the flying being done by local members of the club.

On the following Sunday, Mr. Walsh made two neat flights in a 25 mile wind, making his turns skillfully and landing without accident. The Greer monoplane was brought out and towed by an automobile. It rose easily 20 ft. high when the towing rope broke loose. Mr. George Duesler was in the monoplane. The strong wind caused

(Continued on page 232)

MINOR MEETS AND EXHIBITIONS

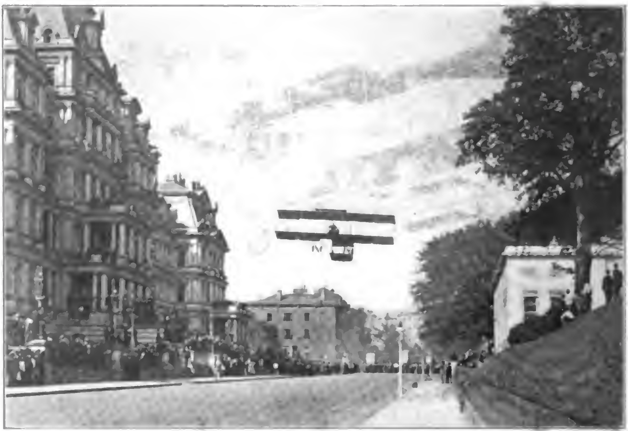


Photo by Courtesy of Major Geo. O. Squier

Start of White on his return to Benning after his remarkable trip from there to pay a visit to the offices of the War and Navy Dept., Oct. 14, 1910. Landing was from the southward, and from a high altitude, on the street shown in the picture and directly between the entrance to the Navy Dept. and the Executive Offices.

Big Meet for Los Angeles.

Los Angeles is to have a meet on January 9-19, now that Pasadena has given up her plans and offered the transfer of the sanction for the date Pasadena had named. At least $75,000 in prizes will be offered. It it made clear that this is to be a "gentlemen's meet," not a commercial proposition, with the representative men of the city back of it. Thus far, Radley, Hoxsey, Brookins, Mars, Willard, Post and McCurdy are to be counted on.

The San Francisco meet, with $103,000 all raised, is off—due to too many "promoters" and booking agents, it is claimed.

Moisant Starts Aerial Circus.

A. J. Moisant, brother of John B., the aviator, has started an aerial "circus," with Peter Young, Hamilton's manager, as ring-master. The "troupe" of flyers includes John B. Moisant, Charles K. Hamilton, who bought Aubrun's Bleriot; J. J. Frisbie, Rene Simon, Rene Barrier, C. Audemars and Roland Garros, the latter two flying Demoiselles. When "dates" are not obtainable they will land in a town and run their own show.

Gabriel Borel, who had contracts with Simon, Audemars and Barrier, is expected to bring suit in France. The three aviators are said to have "jumped" their contracts in joining the Moisant outfit. Borel, who is also manager for Leon Morane, will be back in February and open a school, probably on the Hempstead Plains.

Latham, Drexel and De Lesseps sailed for Europe on Nov. 16th.

Charles F. Willard and Tod Shriver left middle of November for California, Willard to Los Angeles and Shriver to San Francisco.

Death of Johnstone.

While flying at Denver, Colo., together with Brookins and Hoxsey, Ralph Johnstone, the holder of the world's altitude record, and a famous trick bicyclist, met his death during a sensational exhibition of flight on November 17. Telegraph reports state that one wing, which had been repaired on the grounds, crumpled up, and the machine fell from a height of 500 ft., instantly crushing out the life of one of America's very best aviators. Mourning his loss is a wife and little boy and all those who knew him during his fearless life.

The three Wright aviators were filling the dates Nov. 17-22. Hoxsey was in the air at the same time and quickly brought his machine to the ground.

Over the infield after returning from a little cross-country flight, Johnstone pointed the nose of his machine downward for the spiral glide which has made the Wright flyers famous. While the cheers were still rising for his daring, the biplane seemed to check in its smooth course and flutter aimlessly for a moment. Johnstone was seen to be working his levers and trying to recover himself. Then the machine seemed to turn completely over.

More than 1,200 flights have been made this year by the Wright machines in this country and the only other injuries to aviators were to Brookins when he landed against the grand stand at Asbury Park and in his fall at Belmont.

William T. Thomas has been making good flights with his Curtiss-type biplane at the Rochester aviation field, with Walter Johnson as aviator. This machine is open for engagements. Address William T. Thomas, at Hammondsport, N. Y.

ST. LOUIS, Oct. 8-16.—Aviation meeting of St. Louis Aero Club. The totalization for each aviator is as follows:

Hoxsey	(Wright)	9 hrs 31 min.,	29 flights
Welch	(Wright)	5 hrs 27½ min.,	15 flights
Brookins	(Wright)	5 hrs 22½ min.,	28 flights
Turpin	(Wright)	3 hrs 15½ min.,	12 flights
Johnstone	(Wright)	2 hrs. 50 min.,	12 flights
Ogilvie	(Wright)	1 hr. 46 min.,	8 flights
Leblanc	(Bleriot)	1 hr. 32 min.,	8 flights

Fastest speed was made by Leblanc, 67.9 m. p. h., or a mile in 53 sec.

CLEVELAND, OHIO, Oct. 12-16.—No flights were made the first day on account of weather conditions. Curtiss flew the 13th, which was quite a windy day, up and down the beach. Mars and Willard also flew on this day.

On the 14th Mars flew about 2,000 ft. high and 10 miles down the lake, out of sight. That was for a special prize offered by one of the local newspapers, the conditions being that he was to pass the breakwater down the lake; amount offered $500. Ely and McCurdy also made several flights.

On the 15th, the general flying was continued by Curtiss, McCurdy, Mars, Willard, and Post, who made two short flights. That was the last day of the official meet.

On Sunday, the City of Cleveland invited the men to stay and fly, giving a free exhibition. All fences were taken down and about three-quarters of the population attended. The banks along the lake front, about 150 ft. high, covered with grass, were made into a grandstand for probably one-quarter of a mile long, which was crowded with people anxious to see the flights. McCurdy flew out over the lake. Ely flew up over the city to an altitude of about 2,000 ft., so he could be seen from all parts of the city. He flew over the public square and the principal streets in the centre of the city. That flight was made complimentary to the Mayor. Mars made flights out over the lake. Post also made short flights. After the flights, the Mayor and city officials gave an informal reception to the aviators and congratulated them on their work.

WASHINGTON, D. C., Oct. 14.—Grahame-White flew from Bennings racetrack over the city, alighting in the street, at the Executive Offices. Start was made from the street and returned to Bennings. This was during a three-day exhibition at the racetrack by Harmon and White.

STREATOR, ILL., Oct. 15.—Willard flew one day.

SPRINGFIELD, MASS., Oct. 18.—Louis G. Erickson made three good flights.

FORT WAYNE, Oct. 22-23.—J. C. Mars and Miss Blanche Scott in Curtiss biplanes, two-day exhibition; successful flights.

MACON, GA., Oct. 28-Nov. 1.—Frank Coffyn and P. O. Parmalee (Wright) filled this date.

NORFOLK, VA., November 4.—Through the enterprise of a local daily paper, the Curtiss aviators gave the people of Norfolk and vicinity their first opportunity to see an aeroplane in flight on November 1 and 2. Lee Parade Ground, within the Jamestown Exposition grounds, was used as an aviation field, although rather small for the purpose. The meet was of the "common or garden variety," there being some very good flights, but nothing particularly spectacular. Mars was the star of the occasion, and did some very creditable flying in the famous "Hudson Flyer"; while McCurdy, tinkering around a balky 4-cylinder machine, kept the crowd in constant expectation of a race that never came off. An announced flight over Hampton Roads and the city was spoiled on the third and last day of the meet by stormy weather. While no records nor bones were broken, the people, with the exception of a few journalistic soreheads, seem to have been well pleased with the meet. The attendance was fairly good, about 16,000 people passing through the gates during the two days, not mentioning about 10,000 small boys who crawled under and climbed over or just "dropped in."

SHREVEPORT, LA., Nov. 4.—Stanley Vaughn (Curtiss) wrecked his machine in landing after an exhibition flight.

CHARLOTTE, N. C., Nov. 10-12.—J. A. D. McCurdy (Curtiss) was handicapped by bad weather and stayed over an extra day (the 12th), and made a series of successful flights.

PHILADELPHIA, PA., Nov. 17-21.—Clifford B. Harmon, J. A. Drexel and C. Grahame-White promised to fly between these dates. White made a number of flights at Point Breeze, crossing the Delaware River into New Jersey and over the navy yard, in his Farman. Drexel and Harmon flew also. White took up a number of passengers.

MOBILE, ALA., Nov. 21-24.—McCurdy and Post flew. This is Post's first flying since the balloon race. He got off the ground higher and made longer flights than he has ever made.

DENVER, COLO., Nov. 22.—Walter Brookins, Arch Hoxsey and Ralph Johnstone, the famous Wright aviators, and J. C. Mars were scheduled here beginning the 16th and ending to-day. The first day witnessed the terrible death of Johnstone during one of his sensational spirals. Hoxsey refused to be unnerved by the fatal accident to his brother aviator and continued flights the next day. Only one small accident marred the first day's flying, that being when Johnstone alighted the second time. He did not light quite straight to the course, and just as he nearly came to a standstill, his left wing caught in the fence, facing him around toward it.

The second day (17th) is the one on which Johnstone met his fate. He was in a particularly good humor, and said before he started that he would show them some stunts this time. He got off the ground very easily and rose to a pretty high altitude. He then started on a steep spiral descent. He made the first turn all right, but on the second something seemed to break. He lurched sidewise, and the machine plunged towards the ground. Even in the face of death Johnstone seemed to keep his head, as he was seen to crawl out on the opposite plane, and try to balance it. The machine crashed to the ground, pinning Johnstone underneath, where he was crushed to death. Hoxsey, who was in the air at the same time, flew over the wreck, but did not light. On the 20th Mars smashed his right wing on his third attempt at flight. ROBERT A. DONALDSON.

The Curtiss machine, owned by James E. Plew, of Chicago, with Harriman 30 motor, has had a busy summer flying through the middle and far West, with J. J. Ward as aviator.

H. B. Odell, 13195 Euclid avenue, Cleveland, O., has purchased a Demoiselle," with Clement-Bayard motor, and is looking for engagements. While these machines have not done any long flights, they are spectacular in the air.

Aero Calendar of the United States.

Nov. 16-17—Raleigh, N. C., McCurdy and Ely.

Nov. 23—Richmond, Va., Moisant, Hamilton et al.

Dec. 31-Jan. 7—New York Aero Show, Grand Central Palace.

Jan. 12-20—Los Angeles, Calif., big meet.

Feb. 20-25—Boston, Mass., second annual aero show.

March 6-13—Chicago, Ills., aero show.

New World Altitude Record.

PHILADELPHIA, Nov. 23.—A. J. Drexel (Bleriot) made a new world's altitude record at the Point Breeze track, of 9,970 ft., eclipsing Johnstone's height by 256 ft. He used the same barograph Johnstone had when he made his record. The officials neglected to replenish the ink and the record was not clear above 9,970 ft.

Death of O. Chanute.

Nov. 23.—Octave Chanute, the "father of aviation," died at his home, 1138 Dearborn Avenue, Chicago, Ill., to-day, aged 78 years, after a long illness, which he contracted while he was abroad. This is a mournful note to make as this issue is going to press.

DROPPINGS FROM THE BIRD MEN

CASTOR OIL of high grade is used for lubricating Gnome engines.

McCurdy's Curtiss has special Naiad cloth on both sides now. This is said to increase the speed of the machine some five or six miles an hour. Cables operating the ailerons on Curtiss machines are arranged differently than formerly, so that in case the cable to one aileron is broken the other aileron can still be operated in both directions. The ailerons are now hinged to the rear beam, top and bottom, and extend a little to the rear of the rear edge of the main surfaces. A light strut connects the upper and lower aileron on each side.

One of the new small Wright machines which Johnstone used in making his new world altitude record, with the 4-cylinder 30.6 h. p. engine (27 ft. 7 in. x 3 ft. 6 in.) climbed 1,230 ft. in 2 minutes and 48 seconds, a rate of 496 ft. a minute. This breaks all records for quick climbing. Orville Wright himself did this. Good climbing is 300 ft. a minute. Mr. Wright made in this same flight 750 ft. in 1:28, and actually 757 ft. in 1 minute flat. This machine is called by the Wrights the "light roadster."

The Belmont meet has brought out a number of good suggestions for future contests. In speed contests, while they bring out good flying, it is such an intricate problem for the public to keep track of the positions of the various machines that the real point of a race is lost to the spectator. Why not start a number of machines from the starting line, which must be long, at a certain moment (standing start), then race out to a balloon, say five miles or so away, and back. The first to cross the line to be the winner. The spectator would know at once how each machine stood as they neared the line. Wilbur Wright suggests a contest for rising in a given time, to prove the efficiency of a machine in this direction.

A recent editorial in American "Aero" cried down altitude contests as being particularly dangerous and showing nothing. This snap judgment appears too hasty. Altitude flights show strength in the machine, efficiency and perfection in control. Increasing power along with weight gains nothing but if the machine is so designed as to reach high altitudes without the increase in power, does it not show something? To each high altitudes one must have good, reliable power and an efficient machine.

The new engine in the Curtiss monoplane, 8 cylinders, 4½ x 4 in. (64.8 h. p., A. L. A. M. rating), pulled 380 lbs., holding at 360 lbs., a new Paragon propeller at 1,150 r. p. m.

Charles K. Hamilton has bought the Lovelace-Thompson monoplane which Leo Stevens was to have and is installing a Hall-Scott 8-cylinder engine, catalogued at 80 h. p.

The Emerson Engine Co. sold 15 of their 100-125 h. p. engines at their booth at Belmont.

In praising the winning of the Gordon Bennett by White, and the Statue of Liberty prize by Moisant, the newspapers forgot to call attention to the fact that the machines used were not English and American respectively, but French. Unfortunately this detracts considerably from the honor. Why not compete in international events with machines the product of the country, of which the aviator is a citizen. These events are really victories for the Bleriot machine and the Gnome engine rather than for the aviator himself.

The cylinders of the Gnome engine are practically 4¼ in. They figure out 50.5 h. p., A. L. A. M. rating.

The 8-cylinder Wright machine which Brookins had the ill luck to smash in the Gordon Bennett when four of the cylinders refused to fire, it is said, made 68 miles an hour in the one and only trial at Dayton, and not using all of the power. Eighty miles an hour is its probable capacity. It must go around 60 to get off the ground.

Alfred Leblanc is probably the very best aviator flying the Bleriot machine. Not all of the aviator's skill is in simply flying, but in starting and landing. Many of the smashes on the Belmont field were in landing.

Hamilton has a mirror mounted on his machine, set on a universal joint, so that he can see machines coming from behind.

Aeroplane tires with leather tread were seen on the Curtiss monoplane, made by the Diamond Rubber Co. These are for practice. For racing, very small Hartford "Aviator" tires on 12 in. wheels are to be used.

That aeroplane racing should be put in classes according to horsepower is a good scheme. What is the use of flying a 50-Bleriot against a 100-Bleriot. Not allowing for accidents the race is already run. Wilbur Wright urges that 40 to 50 horsepower ought to be the limit for racing, that 60 horsepower and over is dangerously high. Let improvement come in stability and control. The 30-horsepower Wright flies 60 miles an hour, alongside of the Bleriot 50-horsepower. In 1903 the Wrights lifted 750 lbs. with 12 horsepower, in their first machine. The present Wright does not do quite so well, as more power has been added to gain speed, and to have surplus power even with the engine missing. The small Wrights carry more weight, are stronger, faster and have more control than the 50-horsepower Bleriots. There is room for improvement in stability and control of all machines.

Hubert Latham seems to be the only one who has flown the Antoinette with any great success. One seldom hears of flights in this machine comparable to those of Latham. Everyone pronounced this machine the most beautiful of those seen at Belmont. Its flights were stately, but Latham could be seen working hard with his control wheels. The Antoinette machine uses pressure feed for the oil and gasoline.

Harry Harkness is installing an Emerson engine in his Antoinette, which was not seen in flight during the whole of the meeting.

Clothes at the Belmont Meet.—Hoxsey uses a black leather coat with fur lined combination leggins and boots which reach to the hips. Count de Lesseps adopted a single piece suit of coarse blue fabric, similar to overalls, with a cap that fitted close over the head, ears and neck. Graham-White wore knickerbockers with his peak cap worn hind side before, always. Brookins had a neat greenish cloth two-piece suit with the high-cut trousers very full in the stern and tight at the bottoms where they buttoned closely around the tops of the shoes. A pretty leather belt held the jacket close to the body. He had to have help to get his trousers buttoned up. Hamilton and some of the Curtiss men wore yellow leather jackets. Clifford B. Harmon looked very well in a full two-piece yellow leather suit with leather leggins and a huge pair of goggles.

The two Demoiselles, flown by Audemars and Garros, were the clowns of the meet. No meet is complete without them for they were more fun than all the rest of the flights put together. These two big bugs buzzed around the field once or twice every day, half the time on the ground and half off, but they constituted a whole show in themselves.

On more than ordinary windy days, and every day the wind blew fairly much, the flying opened on schedule time with one or two Wright machines; then later in the afternoon some of the Bleriots would be out. On one day it looked as though there would be no flying at all but Johnstone and Hoxsey went up just the same and later Latham brought out his Antoinette and a couple of Bleriots braved the gale. Johnstone and Hoxsey kept going high and higher until they got in a wind, which must have been blowing 70 miles an hour.

Wilbur Wright, G. H. Curtiss and others had to pay in order to get into the field at one time and to get passes to the sheds was like pulling teeth out of a chicken, for those who really had legitimate excuses for admittance thereto, while every day of the meet several hundred who had no particularly good reason for decorating that part of the field, seemed to have no trouble.

The "privileges" must have netted the management a considerable sum. The peanut man, cigar counter, pennant maker, rubber balloon vendor, chewing gum manufacturer, smoked glass magnate, lavatory trust, check room artist and others all paid flat sums of no very small amount. The bar privilege was worth between $5,000 and $10,000, and the man who rented 10-cent camp stools at 50 and 75 cents did a good business. The various exhibitors under the grandstand, of automobiles, propellers, engines, magnetos, etc., paid good money for a little space. The advertising in the program figured up around $7,000, of which the management got over half, and more than 70,000 of these were sold at 25 cents each. The passes and badges admitting lucky people to the sheds could be rented sub rosa at $5 per from enterprising holders. Then there was the man with the opera glasses for rental and the "aviation plumes." The lunch counter did an enormous business, with waiting men and women five deep. The grandstand seats got but little polishing as nearly everyone congregated on the lawn and walk in front.

Clifford B. Harmon, of Philadelphia, Pasadena and New York, mostly the latter, representing the Aero Club of America in his position as chairman of the executive committee of the "National Council of the Aero Club of America," is to be shelved, so the rumor goes, by both these conglomerations. Mr. Harmon is not supposed to be aware of this at all. Mr. Harmon has certainly been very active in the game. He owns one balloon, one aeroplane, one "freak" and two Gnome engines. He has given much time to actually piloting his balloon and his aeroplane, which is against all rules of etiquette of the indoor aero club.

Mlle. Marvingt (Antoinette) has been granted a pilot license. She is the third woman to hold this, the other two being Mme. de la Roche (Voisin) and Mme. Niel (Koechlin).

As early as 1909 Japan possessed an airship of a rather peculiar type, which, however, did not seem very suitable. Now a vessel on more up-to-date lines has been launched, which gives promise of better results. It is of the non-rigid type, and rather stumpy.

Roger Sommer has flown with two motors.

"Automobile Topics' aeronautic editor doesn't seem to know the difference between one aeroplane and another. He has a Curtiss machine, at Baltimore, labeled "Wright 'Baby'."

Southern Motoring—thanks very much!

Far be it from me to—anyway, even if C. William Wurster is a vegetarian, that doesn't stop the other members of the Cumberland nut club from eating meat.

Both Wright and Curtiss aeroplanes are now being offered for sale to the general public for pleasure purposes. Does anyone know anyone else, in the various alleged "aero clubs" of the country, who is going to be a real outdoor airman?

Correct List of Fatalities with Power Machines.

1908.

(1). Lieut. F. E. Selfridge, Sept. 17, Ft. Myer (Wright).

1909.

(2). Lefebvre, Sept. 7, Issy (Wright).
(3). Enea Rossi, Sept. 7, Rome (——).
(4). Capt. Ferber, Sept. 22, Boulogne-sur-Mer (Voisin).
(5). Fernandez, Dec. 6, Nice (Fernandez).

1910.

(6). Leon Delagrange, Jan. 4, Bordeaux (*Bleriot).
(7). Hubert Le Blon, Apr. 2, St. Sebastien (*Bleriot).
(8). Hauvette Michelin, May 13, Lyons (*Antoinette).
(9). Zosely, June 2, Budapest (——).
(10). Thaddeus Robl, June 18, Stettin (Aviatik-German Farman).
(11). C. L. Wachter, July 3 (*Antoinette).
(12). Daniel Kinet, July 10, Ghent (Farman).
(13). Hon. C. S. Rolls, July 12, Bournemouth (Wright).
(14). Nicolas Kinet, Aug. 3, Brussels (Farman).
(15). Lt. Pasqua Vivaldi, Aug. 20, Rome (Farman).
(16). Clement Van Maasdyck, Aug. 27, Flushing (Sommer).
(17). Edmond Poillot, Sept. 25, Chartres (Savary).
(18). George Chavez, Sept. 27, Domodossola (*Bleriot).
(19). Ernst Plochmann, Sept. 29, Mulhausen (Aviatik).
(20). Heinrich Haas, Oct. 1, Metz (Wright).
(21). Capt. Macievich, St. Petersburg, Oct. 7 (Farman).
(22). Capt. Madiot, Oct. 23, Douai (Breguet).
(23). Lt. Mente, Oct. 25, Magdebourg (Wright).
(24). F. Blanchard, Oct. 26, Issy (*Bleriot).
(25). Lt. V. Saglietti, Oct. 27, Rome (Asteria).
(26). Ralph Johnstone, Nov. 17, Denver (Wright).

Chas. K. Hamilton and Dr. H. W. Walden, who are very much alive just now, are reported in the obituary column of an English journal.

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*Monoplanes.

It is of interest to note in connection with the "roll call" the fact that 84 people were killed last year in climbing the Alps, and this year the list totals 60 or more. It is not likely, it is pointed out, that there are many more Alpinists than there are volators. Every death in aviation is a disaster in the greatest degree, yet the public should not be too hasty in condemning the new sport.

BALTIMORE MEET

(Continued from page 208)

and the latter shot at a target with a rifle, and was unable to hit it out of something like a half dozen shots.

On the 11th, Hoxsey made a magnificent flight in a wind estimated at 30 miles an hour, but he could be seen working hard. The aeroplane acted like a rowboat in a rough sea—it was absolutely impossible for Hoxsey to hold it steady for more than a moment, and then great warping was necessary. Latham followed Hoxsey in the wind, and at one time it apeared as though he had lost control. He would drop 100 ft. like a flash, and then would be unable to regain the altitude without making a long incline. After two circles of the field, which took about seven minutes, he descended. The smaller and faster machines were helpless in such a wind as this, and did not attempt a flight.

The last day, November 12, Hoxsey was the only one who braved the icy gale. He was determined that no kind of weather would prevent him from flying at least once every day of the week. Late in the afternoon, when the greater part of the crowd had gone, Hoxsey's machine was wheeled out of the shed by a corps of helpers to prevent it being blown upside down before a start was made. The cheering which Hoxsey got after his flight clearly showed the appreciation of the public. That was the final flight of the meet

McCurdy, Leblanc and Mars

Hubert Latham

Ralph Johnstone

Starting the Demoiselle

Photos by Edwin Levick N.Y.

FLYING AT

Johnstone

White and Harmon

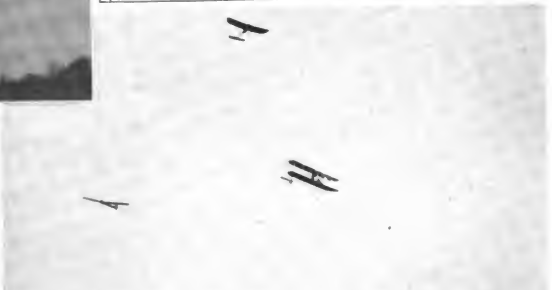
Alfred Leblanc

John B. Moisant

C. Audemars

C. G. White

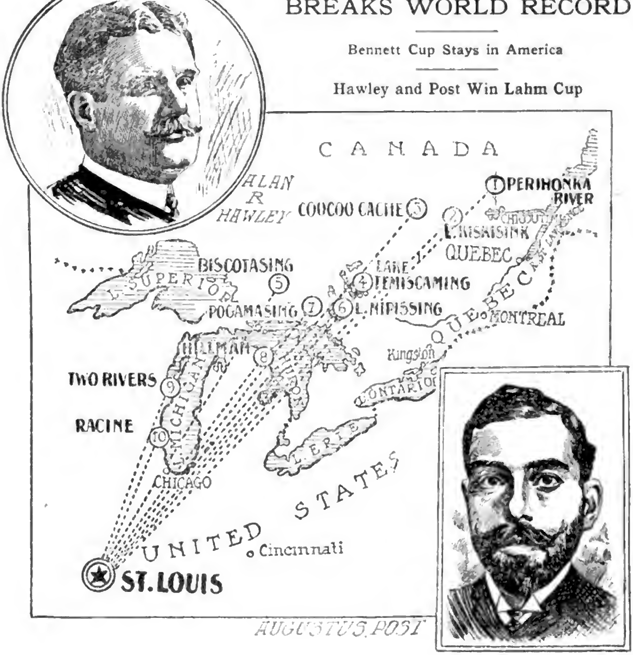
Alec Ogilvie


Latham Drexel Hoxsey Brookins

BALLOON RACE NEARLY BREAKS WORLD RECORD

Bennett Cup Stays in America

Hawley and Post Win Lahm Cup



THOUGH no official figures are yet available, it is practically certain that the winner of the fifth Gordon Bennett International balloon race, which started from St. Louis, Mo., October 17, has not broken the world distance record for spherical balloons, 1193 miles, made by Count de la Vaulx and Saint Victor, October 9-11, 1900, starting from Vincennes, France, and landing at Korostychew, Russia, though until this time it has been held that the la Vaulx record was broken by Messrs. Hawley and Post in their great trip. The distance from St. Louis to the point of landing of the America II, is 1,171.13 miles, as measured by Mr. Williams Welch, chief draughtsman in the office of the Chief Signal Officer, Washington.

After being lost to the world for a week the welcome news was received that Alan R. Hawley and Augustus Post were alive and well, after suffering many hardships in getting out of the wilds of a sparsely settled district.

Five Days in the Wilderness.

After a rough landing at 3:45 P. M. on Wednesday, the 19th, the third day after leaving St. Louis, Hawley and Post began their strenuous hunt for civilization. The night was spent in the basket of the balloon under a tarpaulin. In the morning a reconnoiter was made from a hilltop after a breakfast of soup and crackers. Soon the balloon was abandoned and the long hike begun with but a small equipment of edibles. After a wearisome and slow day, following a stream, another camp was made. Here some instruments were discarded and another day's jaunt begun. This was Friday morning. All day they followed the stream, which joined a river, covering but five miles the whole day. Another camp. By Saturday noon Hawley's knee gave out, having stepped into a hole a couple of days before, and a rest was taken until Sunday morning. By noon they found a woodsman's tent, with the proprietor absent. It was decided to stay here until he returned.

Another night, a really enjoyable one, considering the comforts of a fire and shelter, was spent here. Monday morning as Hawley stepped from the tent and in reply to his call, uttered in the hope that someone would hear, two trappers answered from a canoe. By 11 o'clock the four started down the river in the canoe and made camp after

Standing of the Competitors.

Following is a schedule of the finish of the race, with approximate mileage given for all but the first:

1. AMERICA II., Allan R. Hawley and Augustus Post, landing northeast of lake St. John, Que., 45 hrs., 56 min., 1,171.13 miles; but 22 miles behind the world distance record.
2. DUSSELDORF II., Ing. Hans Gericke and Samuel F. Perkins, landing 17 miles northeast Lake Kiskisink, Que., 42 hrs. 24 min., 1,131 miles.
3. GERMANIA, Capt. Hugo von Abercron and August Blanckert, landing 4 miles from Coocoocache Sta., Que., 40 hrs. 6 mins., 1,079 miles.
4. HELVETIA, Col. Theodore Schaeck and Paul Armbruster, landing 6 miles from Lorrainville, Que., 24 hrs. 33 mins., 826 miles.
5. HARBURG III., Lieut. L. Vogt and Wm. F. Assmann, landing 10 miles northeast North Bay, Ont., on Gull Island in Lake Nipissing, 32 hrs. 22 mins., 766 miles.
6. AZUREA, Lieut. E. Messner and M. Givaudan, landing 22 miles northeast of Biscotasing, Ludburry Co., Algoma, Ont., 38 hrs. 53 mins., 756 miles.
7. ISLE DE FRANCE, Alfred Leblanc and Walter de Mumm, landing 3 miles north of Pogamasing, Ont., Munro Siding, P. O., 35 hrs. 722 miles.
8. ST. LOUIS IV., H. E. Honeywell and J. W. Tolland, landing 1½ miles south of Hillman, Mich., 23 hrs. 34 mins., 552 miles.
9. CONDOR, Jacques Faure and Ernest G. Schmolck, landing 4 miles north Two Rivers, Wis., 20 hrs. 5 mins., 413 miles.
10. MILLION POPULATION CLUB, S. L. von. Phul and Jos. O'Reilly, landing 6½ miles north of Racine, Wis., 14 hrs. 32 mins., 317 miles.

covering 10 miles and encountering many lakes and portages. Trout caught from the stream furnished the next morning's meal. On Tuesday the trappers put the aeronauts ashore and, following a wagon road, a little settlement was reached. Here telegrams were sent and the anxiety of the interested world relieved. From there on it was easier traveling. When they arrived in New York they got a great ovation.

The greatest altitude reached was 17,000 feet. Bags of ballast taken, 29½; 6 left before landing.

The third day after the race started the ninth balloon was reported, that containing Hans Gericke and Samuel Perkins, who also had apparently nearly broken the world's record for distance. All the other balloons were reported without much delay. No balloon race ever held, so far as known, resulted in such generally great distances. The gas furnished was better than in 1907.

The American team originally included J. H. Wade, Jr., pilot and A. H. Morgan, aide. Owing to the death of a member of Mr. Wade's family it was impossible for him to go in the race and the president of the Aero Club of America authorized Mr. Morgan to act as pilot, with A. Leo Stevens aide. The St. Louis club members objected to this and demanded that S. Louis Von Phul, who stood fourth in the elimination race, be substituted. A rule was found to cover this point, and after a heated conference Bishop reversed himself and Von Phul was named as the third pilot of the team. H. E. Honeywell and J. W. Tolland comprised the third member of the American team.

TRIP OF THE DUSSELDORF.

By Samuel F. Perkins.

After 42 hrs. and 24 min. in the air, during which I saw some of the most wonderful sights of my life, we were dropped from a height of 4 miles in a very few minutes, into an almost impenetrable Canadian forest. These experiences, with the attending adventure in getting clear of the woods, form one of the most thrilling experiences I have ever known.

It was entirely by chance that I got the opportunity to go; Lieut. Gericke first offered the place to H. H. Clayton, who sailed in the winning balloon in 1907. Mr. Clayton could not accept, however, and the honor fell to me.

To me also fell much of the work of preparation for the trip. In case of landing on water, I took along two life preservers, and I took besides food and water for two, calculated to last three or four days. When we met at the balloon grounds, it turned out that Lieut. Gericke had understood that he was to attend to the food supply. So we had double rations, and rather than leave the food we put it all into the basket of the balloon. I was afterwards very glad that it happened so, for there is no doubt in my mind that it saved our lives.

At last came the starting signal, the men let go, ballast thrown out, the balloon rose, and we were off.

Lieut. Gericke and I had our plan of action all mapped out before we started. This was his first balloon trip in this country, but I was familiar with the country, having traveled all over North America from Canada to Mexico. I had also had experience with ballooning for some years under Capt. Thomas S. Baldwin. It was therefore arranged that I was to take charge of the maps and direct the course to be followed, and Lieut. Gericke was to operate the balloon. This plan worked out excellently; Lieut. Gericke is a master at handling a balloon, and as much of the success of the trip is due to his handling as to my finding the air currents we wanted.

Nothing eventful happened from the time of starting, Monday night, until 9:30 P. M., Tuesday. We had passed over Milwaukee and crossed Lake Michigan in the morning. At 5 o'clock we were becalmed over Georgian bay.

We began hunting air currents, making five trips from the level of the lake to a height of three miles in search of a breeze. Finally, about 9:30 P. M., we began to move to the northeast again, riding—as we afterwards discovered—on the front edge of a storm. The speed was terrific, and we whirled along all that night and all the next morning across rough country. It was all marsh land and looked as though, if we were to land, any walking would have put us into sloughs where we should have sunk and left nothing but a gurgle. The situation began to be uncomfortable; our ballast was running low, and when that was gone of course we should no longer have any control of the balloon.

We had seen no single sign of life since 9 P. M. on Tuesday, and here it was noon of Wednesday and we were tearing across impossible country at express speed. The last sound we had heard from below was when we passed over Grand Manitoulin Island in Georgian bay.

At night we often seemed to be chasing our own shadow, sometimes almost catching up with it, again falling far behind; this was caused, of course, by the contours of the ground beneath us. The oddest incident was to see cattle at night, scared by the hovering shadow, race madly away in fright, sometimes running for miles with their bells jangling.

Wednesday, just before noon, we saw a large lake about five miles ahead, and almost at the same time saw the rails of the Canadian transcontinental road for which I had been looking. It must be remembered that we had by now only the vaguest idea where we were, except, in a general way, that we were in the St. Lawrence valley and headed for the ocean or the Labrador coast.

We still had some ballast, sufficient to go on for some hours more at least. But here we were at apparently our last chance to get back to civilization. I knew there were no more railroads, and that in the direction in which we were traveling there was nothing but wilderness. We had some provisions, it is true, and I had a 22-calibre revolver; but we had no hatchet, no cooking utensils, in a word, no outfit for traveling through the woods. It seemed necessary to descend and land, and the big lake—it was Lake Kiskisink—looked to be the most favorable sopt.

When the decision was made we were about three miles up. We tried to open the valve in the top of the balloon, but it would not work. The balloon went up fast, and we tried five times before we got it open. And then came a downward rush that is indescribable—4 miles downward in 9 min. As the gas leaked out the bottom of the bag caught the air, and the great canvas blew up into a mushroom against the overhead netting, making a parachute exactly like that used by the droppers from hot air balloons at country fairs.

Of course the balloon was still traveling across country at a terrific rate, and when it seemed as though we should be dashed against the treetops, I climbed out of the basket and up on to the side of the balloon, hanging in the netting, to ease the shock of landing.

Some idea of the speed at which we were going may be had from the fact--which we learned afterward--that though we started to come down when we sighted the lake 5 miles ahead, we got 17 miles beyond it before we struck the ground. The landing was very rough, and we were lucky to get off with our lives. The underbrush was very thick, and this undoubtedly saved our lives in the shock of landing, though that same underbrush later on nearly cost us our lives, trying to get through it.

It seemed to me that we were only a few miles beyond the lake, and that we could reach the railroad in 5 to 7 hours. So after a rest we started, first carefully packing the balloon. Also I climbed to the top of the nearest high hill, and set our flag on a tree; this also later on turned out to be almost providential.

It was 2:30 when we started on foot for the lake, carrying blankets and provisions and a few personal effects. All the afternoon and well into the darkness—until 7 P. M., in fact—we struggled through the brush. It seemed as though we had gone miles, but as a matter of fact it was not more than three-quarters of a mile. In the darkness we could not go ahead, or back, so we camped for the night. It began to rain—the very storm which had been hurrying us across country.

Next morning at daylight—this was Thursday—we returned to the balloon, realizing now for the first time that we had a serious job on our hands to get back out of the woods alive. We rearranged our packs, and started, this time in earnest. It seems ridiculous to say so, but the brush was so dense that we could make not more than a mile a day through it, and we had three small rivers and two lakes to cross, too.

The trip made me doubt many times whether the honor was worth the risk.

We crossed the lakes and rivers on rafts, which we made of logs tied together hurriedly. Making these rafts took time, for we often had to carry our logs for some distance, being unable of course to cut any near at hand.

At night we built huge bonfires on the top of an eminence. One man watched while the other sleps, and the fire had to be replenished—with no ax to cut fuel, remember—every two hours. We heard wild beasts all about us, and thought we could distinguish the howling of wolves, but nothing attacked our camp. We saw on Friday the tracks of some large animal, probably a bear.

Every night we could hear the whistle of the train, but we never seemed to get any nearer to the railroad. This puzzled me greatly.

All day Thursday and all day Friday we plugged along, always expecting to come to the railroad and never reaching it. Saturday, at noon, we were making a raft, when we heard a gunshot. I immediately climbed to the top of the nearest high tree, fired my revolver, shouted and waved a flag. The man who had fired the first shot saw the flag, though he was nearly four miles away, and he came to us in his canoe.

He was Theodore Boivin, the guardian or watchman for the Pennsylvania fish and game club, on whose preserve we had landed. Boivin was making a trip up the river, looking for poachers, as part of his work, when he saw the flag I had stuck up on top of the hill where we landed. He was utterly at a loss to understand the flag, for nobody had left the lake for the woods, and there was no other way of getting into the woods. So he fired his gun, and heard our answer. From Thursday morning to Saturday noon, plugging as hard as we could, we had gone only 4 miles!

We learned from Boivin where we were, and were able to figure at once that we had come 1,210 miles. The lake was 135 miles northeast from Quebec.

Experienced woodsmen later told us we were extremely lucky to get out of the woods. Winter comes early in that latitude, and brings 10 ft. or so of snow when it does come. Sleeping out on the ground, too, for men unaccustomed to it, is very weakening. We were about all in when Boivin found us.

When we told Boivin that we had abandoned our balloon, he didn't know what we meant. He had never heard of a balloon, and had never been out of the Canadian forests in all his life. He thought we were foolish.

He took us down to the settlement in his canoe. There the people thought we had fallen out of the sky; that was as far as their imagination would take them. They told us that it would have taken us 12 days to get out, the way we were going, and that would have been only if we could keep up our speed.

We promptly went to bed at the village, and we stayed there 24 hours. I never was so glad to see people again in all my life. And then, after resting up, I started for home, by the way of Montreal. Mr. Gericke remained behind to get Indians to go with him and tote the balloon out of the woods.

By Capt. H. E. Honeywell.

After a perfect start from St. Louis in the international race, we took a northwestern course, being well equipped for a record run. We had 31 bags of ballast, which should have been enough to run us at least for 48 hours. Our instrument equipment consisted of two aneroids, two statoscopes, two recording barometers and a compass. Dr. L. E. Custer, of Dayton, furnished us with one of his statoscopes, an invention of his own and fully described in **Aeronautics** some time ago. Paul McCullough, of St. Louis, furnished us with a tungsten light and batteries, which gave constant illumination.

Up to 11 o'clock we had used 5 bags of ballast, running at an altitude of 400 to 800 ft. From then until 8 A. M. not an ounce was used. The good balloon took care of itself most remarkably, just skimming the earth.

My aide retired at 9 P. M., rolled up in a blanket on the floor of the basket. At 2 A. M. we passed over Davenport, Ia., with 26 bags of ballast. Here we started to go northeast. At 7:15 A. M. Lake Michigan was in sight and we were at an altitude of 4,000 ft., the sun expanding the gas. In 15 minutes we were just over the lake, with 24 bags of ballast, and 30 miles beyond Milwaukee. At 11:30 A. M. we were over Frankfort, Mich., on the east shore of the lake, altitude 6,500 ft., ballast 20 bags. At 3 P. M. we were at 5,000 ft. and going E. N. E., 10 bags of ballast, and using plenty of sand, as there were many choppy wind currents. "Afraid we won't make over Lake Huron. Headed for Alpena. Our course over lake will be at least 185 miles. Contraction taking place fast," our records read. At 5 P. M. we landed just south of Hillman, Mich., with 5 bags left.

I have learned the cause why we could not strike an equilibrium over the lake and state of Michigan. The "Million Club" and the "St. Louis IV." balloons were not covered with tarpaulins during the night prior to inflation, as all the others were. The crickets had eaten many small holes which had been covered with adhesive plaster during inflation. They became wet with dew the first night in the air and warped off the next day under the heat of the sun and the expansion. This caused a great leakage of gas and made it impossible for us to remain a second night in the air.

ASCENSIONS.

PITTSFIELD, MASS., Oct. 9.—William Van Sleet, pilot, and Jay B. Benton, in the "Pittsfield," landed at Fitzwilliam, N. H., at 6:15 A. M. to-day, after a 60-mile trip from Pittsfield, Mass. The ascent was made at 1:15 and the aeronauts encountered heavy clouds most of the journey. The highest elevation reached was 1,700 ft.

HAMILTON, O., Oct. 28.—Dr. L. E. Custer, pilot, and Dr. D. E. Sheehan, in the "Luzerne," up half an hour, landed near the city.

HAMILTON, O., Oct. 28.—Albert Holz, pilot, Jack Gordon, M. E. Meth, Frank D. Moore and Chas. Troutman, in the "Drifter."

NORTH ADAMS, Oct. 30.—N. H. Arnold, pilot, Leroy H. Taylor, W. A. Stowe, W. J. Seidenberg and Col. George W. Gregory in the "Cleveland," to Stafford Springs, Conn. Dist., 78 miles; dur., 4 hrs.

OAKLAND, CAL.—Capt. Park A. Van Tassel, pilot, landing near Alvarado, Alameda Co. Dist., 20 m.; dur., 2 hrs.

PITTSFIELD, MASS., Nov. 3.—Jacques Faure and Walter De Mumm in the "Pittsfield" in the rain. Landing 20 m. away, near Barrington.

NORTH ADAMS, Nov. 19.—A. Leo Stevens, pilot; H. Percy Shearman, Kenneth Price and George Ernst, all members of the Williams College Aero Club, in the "Cleveland," had a rough time of it. A high wind blew at the start and to avoid landing in a lake outside of Providence, R. I., it was necessary to throw out every available object, including clothing. This enabled the balloon to cross the lake, when Shearman was thrown out and somewhat injured.

THREE STATES AERO SHOW

By Wilbur R. Kimball.

THE Three-States Aero Show, under the management of Henry M. Neely, opened at Philadelphia, November 2 to 12, inclusive, in the First Regiment Armory. The space was well taken up before the doors were open, and a fair attendance in spite of three days' bad weather. Exhibitors included a comprehensive showing of kites and aerial advertising apparatus by S. F. Perkins of Boston, the Metz Co. of Waltham, Mass., with a line of automobiles, a cross-channel type Bleriot, and their new rotary engine of 125 h. p. weighing 375 lbs.

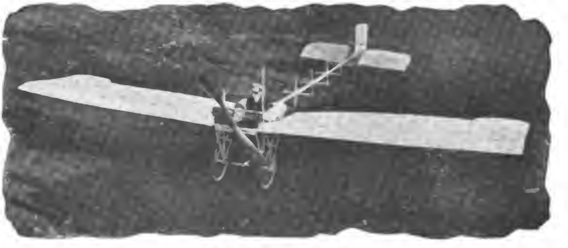
The Detroit Aeroplane Co. had on exhibition a new type monoplane and their double opposed air cooled engine.

The Aerial Navigation Co. of America exhibited the Call aviation engine. Other engines shown were, the Elbridge, Anzani and International Six Cycle. Other exhibitors were the Hart-Kraft Motor Co., Harris-Gassner Co., propellers; Mineola Novelty Co., the Gill biplane; the Burgess Co. & Curtiss, of Marblehead, Mass., with a new "Type F" biplane; Pennsylvania Rubber Co.; Wittemann Bros.; Lincoln Square Novelty Co.; Standard Roller Bearings, and Goodyear Tire & Rubber Co.

A prominent booth was occupied by **Aeronautics.**

Attendants were entertained with good music and moving pictures of the aeroplane flight by Col. Roosevelt, and the international balloon race at St. Louis arranged by L. E. Dare.

Two interesting features by Clifford B. Harmon were a new type of monoplane with two Gnome engines and his Farman biplane wrecked at Belmont Park meet.



"Miss Detroit" Monoplane

Numerous small stalls were occupied by various models, while overhead were hung kites and gliders. The centre of the big hall was taken by the balloon exhibit of the veteran aeronaut, Samuel A. King.

Hugh L. Willoughby loaned his big biplane "War Hawk." There were four gliders exhibited. The White Aeroplane Co. had a good display of parts for models and accessories. The National Supply Co. was another exhibitor.

The Detroit Aeroplane Co monoplane "Miss Detroit" was the hit of the show. Two of them were sold, one for Atlantic City, where a training school is to be started next summer. The Gill biplane and the Demoiselle were both sold. The "War Hawk" went at auction—the first aeroplane auction—to a man who wanted the engine, leaving the framework for Mr. Neely. Fourteen motors are said to have been sold at the show, mostly by the Detroit Aeroplane Co. The Goodyear Tire & Rubber Co. sold 830 yds. of fabric for two balloons which Samuel A. King will build for local enthusiasts. The Standard Roller Bearing Co. sold 2,000 sets of bearings in one order and the Harris-Gassner Co. sold 10 propellers. This concern had a man carving propellers right in their booth and this was one of the most popular features of the show. Harmon and Grahame-White came to the show one night and each ordered a set of Farman wheels from Goodyear. Harmon bought a set for the Cage Tubular Monoplane from the Pennsylvania Rubber Co., and a set of beautifully made scale drawings from Philip McCutcheon, a boy in the Pennsylvania Aero Club. Mr. Neely has purchased from him a set of working models for his lectures.

"Miss Detroit" Monoplane.

The Detroit Aeroplane Co. has put on the market a monoplane fitted with the company's two-cylinder opposed 20-30 h. p. motor. This was seen for the first time at the Philadelphia show. It is sold subject to half hour demonstration at the factory in Detroit. **Details follow:**

Main Plane.—Spread 30 ft., area 150 sq. ft. Ribs have a double curve. Waterproof fabric both sides. **Stability.**—In the extremities of the wings sections have been cut out and hinged to the rear lateral beam. These float in the air stream in flight, being depressed individually through their attachment to the steering column. The **fuselage** is a single seamless steel tube of large diameter braced with wires over horizontal and vertical masts. **Supplementary Surfaces.**—Two curved horizontal rudders are connected to the rear of the fuselage on a common axis. A vertical rudder steers right and left. **Running Gear.**—The framing of the engine section is of spruce joined with steel and aluminum connections. Twelve uprights run down to four points at the axle of steel tubing. The two front wheels are quite large. A rear wheel is just below the vertical rudder pivot. This wheel steers on the ground. **Power Plant.**—Detroit Aero engine, 20-30 h. p., 2 cyl. opposed, driving 6 ft. propeller, of 5 ft. pitch. This air cooled engine is claimed to deliver 25 h. p. at 1,200 r. p. m. Four pedals operate spark advance and throttle. In the rear of the engine is an oak seat. **Control.**—Directly in front of the operator is a universally mounted hand wheel. The elevating planes are controlled by a fore and aft movement of the steering column, lateral stability by movements to right or left. The vertical rudder is controlled by turning the wheel around its axis. The foot operates a brake. The weight is 250 lbs.

Call Engine.

A rather unusual exhibit was that of the Call aviation engine, exhibited by the Aerial Navigation Company of America, with headquarters at Girard, Kansas.

All the exposed parts, from cylinders and cylinder heads down to the minutest details not constructed of magnalium, a shining, non-corrodible metal, are nickel plated, and the whole polished to a mirror finish.

Indeed, as the eye takes in a mechanism of this character, suited in appearance to adorn the show window of any jeweler's shop, the conclusion is at once reached that the exhibition structures are specially prepared for the occasion. We were assured, however, that the engines shown are regular stock engines.

It is, moreover, evident that strength and reliability have not been sacrificed to mere beauty of appearance. On the contrary, the care in this particular is only indicative of the workmanship throughout, as shown by the unassembled parts, also on exhibition.

The cylinders are of vanadium grey iron, with walls five-sixteenths of an inch in thickness throughout, and in addition are heavily ribbed with spiral water-jacket partitions, and strongly filleted at corners. The cap screws at cylinder base and head are three-eighths of an inch in diameter, and instead of the usual four, or at most six, in number, one dozen are used to secure each cylinder to crank case, and one dozen to secure each cylinder head to the cylinder.

The same regard for strength manifest in the cylinder construction is also shown in the cylinder heads and piston heads. Like the cylinders, these are of vanadium grey iron, cast in the company's foundry, the pistons being about five-sixteenths of an inch in thickness at the head and around the circumference to a point below the wrist pin bearings. In addition star-type cooling and strengthening flanges radiate from inside center of piston head and along the walls beyond the piston rings and wrist pin bearings.

The cylinder heads are also approximately five-sixteenths of an inch in thickness adjacent to explosion chamber, with nine-sixteenths of an inch water jacket space. Both the exhaust and intake valves are in the head, the cages being of vanadium grey iron cast integral with the cylinder heads, thus insuring against danger of leakage, and possessing the additional advantage that valve seats are adjacent to water jacket without intervening joints.

The crank shaft is 1 37-64 in. in diameter, and 1¾ in. at the crank pin bearings, while the throws are 1 in. x 2 in. This, together with the cam shaft, valve stems, push rods, and other like parts, is of vanadium steel twice heat-treated in the company's plant to 1,550 deg., quenched in oil, and thoroughly annealed. Lathe shavings are shown of such uniform strength and toughness that they require the full exertion of a man's strength in a direct pull to break.

The crank case is of magnalium, a light and very strong alloy of magnesium and aluminum, thoroughly ribbed and braced in such a way as to enable it to withstand any explosive stress encountered.

In addition to large valves with unusual valve lift, an auxiliary exhaust one inch in diameter gives ample clearance of exhaust gases, thus protecting valve seats and valve stem bearings. The auxiliary exhaust is provided with check valve to avoid escape in the compression, as also the inrush of unmixed air or exhaust gases during suction stroke. Both main and auxiliary exhausts are silenced.

Force lubrication is provided from a tank by means of a gear pump, distributing oil to various needle valve sight feed oilers, a relief valve between the pump and feeds permitting the surplus supply of oil to return to tank. A similar pump and circulating system for gasoline permits the direct injection of fuel into cylinders, as in the celebrated Antoinette engines—should this system be preferred to a carburetor—with the additional advantage that in the Call engine the fuel is injected into specially constructed mixers, and from there drawn into the cylinders. A much larger gear pump provides force water circulation, and is especially adapted to circulate the water through the spiral water jackets and throughout the length of the "Call Combination Radiator and Heater."

The engines exhibited are of the opposed type in 2 and 4 cylinders; the 2 cylinder engine develops 50 h. p. and the 4-cylinder, 100 h. p. at 1,750 revolutions, A. L. A. M. rating. This comparatively high power development is permitted by the unusual size of the cylinders, the bore being 6 inches and the stroke 5¼ in. The manufacturers, indeed, claim that the use of this size cylinders, as also the opposed construction, enables them to construct a remarkably strong, while at the same time an unusually light engine. Although the weight is but little over 3½ lbs. to the h. p., the crank shaft, connecting rods, cylinders, and other parts approximate in size and weight the very strongest automobile engine construction.

During the Philadelphia Aero Show Carl Wittemann, Philip McCutcheon and W. H. Aitken made short glides in a Wittemann glider, towed in the air by willing hands at ropes tied to the machine.

EXHIBITS AT BELMONT

Under the grand stand there was held during the meet an exhibition of aeronautical supplies, though not very complete. The Aerial Equipment Co. showed the Anzani motor, and C. H. Metz, of Waltham, Mass., a new revolving engine, of 125 h. p., for a weight of 375 lbs. There are seven cylinders, 6¾ bore and stroke. These are machined from chrome steel, as well as the crank shaft and pin. The valves and push rods are nickel steel. The gas is taken in through the crank shaft to the base and intake pipes to mechanical valves. Oiling is by geared pump through crank shaft, and distributed to pistons and bearings by centrifugal force. This company also exhibited an Anzani-engined Bleriot, and will shortly have on the market "Bleriot-type" monoplanes.

The Hartford Rubber Co. have brought out a new tire, 20 x 3, which looks fine. The Goodyear Tire & Rubber Co. had a fine exhibit of tires and various weights and kinds of aeroplane cloth which they have recently put on the market. The American Propeller Co. was represented with a big stock of Paragon propellers, and reported good business.

The White Aeroplane Co. had a large booth. The White catalogue is the first we have known to be devoted to model work. Gas engines are listed from $35 to $105, and even ball bearing propeller shafts and driving gears and brass fittings may be had. There are miniature turnbuckles, wheels, propellers, forks, rattan and bamboo listed, everything a model maker might want.

The two cylinder opposed Call engine, of the Aerial Navigation Co., of Girard, Kansas, with its highly finished cylinders, attracted considerable attention. This was the first time it was shown in the East. Other exhibitors were: John A. Roebling's Sons, wire cable; Peter Frasse & Co., tubing; Bosch Magneto Co.; Marburg Bros., Mea magnetos; Emerson Engine Co.; Y. M. C. A. aero school.

The Emerson 100-125 H. P. 2-cycle engine shown under the Belmont grand stand was one beautiful piece of workmanship. One feature in the building of this motor, which is not in use elsewhere, is the method of turning the piston heads. During this operation each one is heated to 700 deg., or service temperature. Instead of being turned absolutely round when cold, and then be out of shape when hot, they are turned hot, so that when heated in service they come up to perfection in fit.

The Emerson engine is the highest powered 2-cycle aero engine on the market, rated at 100-125 h. p. for 300 lbs. of weight. It holds a world record in the 26-foot motor boat class, of 36.1 miles an hour. A feature is the heating of the gas mixture before it enters the combustion chamber.

Marburg Brothers, of 1777 Broadway, New York, had three articles which should be of considerable interest to everybody interested in flying machines.

First among them is the Mea high tension magneto. The main difference between the Mea and the type of magnetos which we have been accustomed to is the adoption of a bell-shaped magnet. The same is placed in a horizontal plane, and the armature runs in the axis of the magnet. As a consequence the whole instrument is practically centrifugal with very little overhanging weight, and in advancing and retarding the spark the field magnet is advanced and retarded together with the timer, thereby assuring a spark of equal heat over a practically unlimited range of timing. We are told that instruments have already been delivered for aeroplane work with 100 deg. range of timing, something that must be of the greatest interest to manufacturers of 2 cycle and also 6 and 8 cylinder engines.

The S. R. C. ball bearing is another article exhibited by Marburg Brothers. This bearing is made in Switzerland, and the shape of the cage is quite different from that of other bearings. It works like a scoop, thereby forcing a very liberal circulation of oil.

The third product exhibited by Marburg Brothers is "Duralumin," a metal which, according to tests made, is as light as aluminum and as strong as steel. It can be rolled in various shapes, and can also be drawn in tubes.

ST. LOUIS SHOW

By E. Percy Noel.

THE main features of the show are the full-sized aeroplanes, which are exhibited in the center of the Coliseum. Many types are represented, among them Captain Baldwin's new machine with wing tips. The St. Louis "Post-Dispatch" has his old biplane, the Red Devil, on exhibition. The latter is the machine with which he flew 40 miles along the St. Louis river front late in September.

The Detroit Aeroplane Company introduces the monoplane "Miss Detroit," which was one of the centers of interest at the Philadelphia Show

The Aeromotion Company of America exhibits a Farman-type biplane and also a 50 h. p. Gnóme motor. Howard W. Gill has one of his noiseless biplanes on exhibition in the center space. E. F. Waits, a local builder, has a Demoiselle-type monoplane to show. The Aeronautic Supply Company exhibits a Gill biplane of the Curtiss type.

L. L. Prince has his monoplane of the 'Bleriot type completed and it occupies a prominent place. Other machines are those of A. Kuhno and E. Swift, the former being similar to the Gill biplane, and the latter a new development of the ornithopter idea.

Model monoplanes are shown by Sam Lambert (Bleriot), Jean H. Reitmann (two models), W. R. Williamson, W. L. Newson (Cage monoplane), Paul Barney, large model of his own invention, and L. E. Dare, who exhibits working models. A model triplane is shown by A. T. Harley.

The aeroplane supplies are shown by the Aeronautic Supply Co., which, oy the way, was the first organization of its kind in America. The Mineola Specialty Co., too, has toy aeroplanes on sale. The Carter Carburetor Co. has a full line of its carburetters on exhibition. The White Aeroplane Co. has a line of miniature parts for inventors and model makers and complete models. J. Deltour & Co., of New York, show bamboo, cane and light woods galore, to cheer the builder's heart.

The Pennsylvania Rubber Co. has a display of its fabrics and aeroplane cloths. Penacloth, the new creation, promises to become one of the staple products of its kind and this within a very short time.

The Goodyear Tire and Rubber Co. shows an outfit of tires, rubber springs, shock absorbers and bumpers of the latest design. A varied assortment of samples of different grades of balloon and aeroplane cloth is to be one of the features of the exhibit.

The St. Louis Pattern and Model Co. has an interesting array of models and of patterns for parts, together with an original model aeroplane. It will also have an assortment of small nickel-plated aeroplane models, intended for the automobile owner as an ornament on the water cap of his radiator.

At the Leading Brass Foundry booth we find a large assortment of McAdamite castings. McAdamite is a new metal and is one of the lightest, and, considering its weight, one of the strongest, alloys yet compounded by man. It is made under a secret formula, at a Brooklyn plant, and the raw metal is shipped out to the agents to be made into castings.

Among the most interesting exhibits on the grand circle are those containing aeroplane motors. The Gnome, in particular, attracts much attention, because it is so little known in this section of the country. Next is the Boulevard, which is daily making a better reputation for itself. The Aerial Navigation Company of America exhibits its horizontal 2-cylinder motor.

There will be at least one Elbridge motor on the floor, owned by J. N. Sparling, of East St. Louis, Ill. Other engine exhibits are a 4-cylinder Curtiss, shown by Roy W. Anselm; a Lippert, a Roberts, a Hardy-Davidson and an Overland The Detroit Aeroplane Co. is featuring its double-opposed air-cooled motor in addition to its aeroplane. An Anzani is promised before the end of the show

The Phoenix Auto Supply Co., of St. Louis, has a Detroit "Aeromotor" on exhibition, in addition to a general line of automobiles and aeronautic supplies. Of interest to both automobilists and aeronauts should be the exhibit of dehydrated food by the American Food Co., which is a condensed article of diet useful to airmen.

The C. & A. Witteman Co., which has been making aeroplanes and gliders for several years, shows an interesting exhibit. The company did not decide to use the space at the show until almost the last moment. It has an exhibition of supplies and accessories. The company is one of the best known American concerns, and the exhibit should prove one of the most interesting in the Coliseum.

Samuel F. Perkins, with his man-carrying kites with which he has made frequent ascensions, exhibits various kinds of cerf-volants. He furnishes man-carrying kites for exhibition purposes and also advertising kites, which attract a great deal of attention.

The Overland Automobile Co. showed its famous wind-wagon. Capt. John Berry, the veteran St Louis aeronaut, is to exhibit the balloon basket with which he has long intended to climb Mt McKinley.

Other exhibitors are the Signal Corps of the National Guard of Missouri, the United States Weather Bureau.

The following makes of propellers are found on exhibition: Chauviere (Aeromotion Company of America), Paragon (American Propeller Co.) and propellers made by the St. Louis Pattern Co., the Harris-Gassner Co. and the Aerial Navigation Company of America.

Ben Schwartz will exhibit a dirigible balloon and a small 1½ h. p. motor, designed to operate it. It is intended to be steered by wireless. Spherical balloons will be shown by the Aero Club of St. Louis, the Million Population Club, and Capt. John Berry.

The hangar and tent department are represented by the F. L. Stewart Construction Co., which builds aeroplane hangars; the O. K. Harry Steel Co., which furnishes portable hangars and which will have a small steel model of a hangar with a miniature aeroplane inside, besides a full-sized automobile garage; and the Missouri Tent and Awning Co., designers of aeroplane tents. The S. F. Bowser Tank and Storage Co. will show hangar equipments of buried gasoline tanks and self-measuring pumps

Chicago Show Postponed.

The aeronautic show of the Aero Club of Illinois has been postponed from December 1 to 8 to March 6 to 13. It is believed the spring of the year is a better time to hold a show there, and the dates decided upon are much better than the ones formerly selected.

Special Offer! Warning!

In order to reduce the strain on the bookkeeping department of "AERONAUTICS" and to secure an increase in the monthly bundle of good stuff this extraordinary offer is made:

FOR TEN DOLLARS IN COIN OF THE REALM, WE WILL ENTER YOUR SUBSCRIPTION TO THE ONE AND ONLY AERONAUTICAL MAGAZINE IN AMERICA FOR LIFE, OR AS MUCH LONGER AS MAY BE DESIRED. SPECIAL ASBESTOS COPIES ARE BEING ARRANGED FOR.

Do not delay! This is the chance of a lifetime—there's no telling how long you may live. Open to present subscribers as well as non-subscribers. Just inclose your check, money order, or ten dollar note in an envelope with your name and address and you will be enrolled at once in the Great and Honorable Scroll.

"AERONAUTICS"
250 West 54th St., New York

News In General

Aero Show for New York.

The rapid growth of the aeronautic industry has now made it possible for the first time to bring together under one roof a great number of representative aeroplanes that have accomplished sensational results.

The first Industrial Aero Show will be held at Grand Central Palace, New York, December 31 to January 7, 1911, in conjunction with the eleventh International Automobile Show.

Some of the best known aviators and manufacturers have promised to be present and have their aeroplanes or accessories on exhibition.

Such a representative gathering of the leaders will afford an opportunity seldom offered for the display of all aeronautic apparatus, accessories and supplies.

Complete information regarding rates, allotments of space, etc., will be mailed upon request.

One entire floor will be reserved for the aeronautic display, well lighted and decorated in order to show off the exhibits to the best advantage. See advertisement in this issue.

As the aviation centre of the United States, New York is, with its manufacturing interests and aviation fields within easy reach, particularly adapted to the holding of such an exhibition, and an attendance of 150,000 at the Automobile Show of a year ago promises a still larger attendance this year.

The first comers will get the best space, and the shortness of the time makes immediate action necessary. Write **Aeronautics** for complete information.

"Missing Link in Aeronautics."

In the article with the above title published in the November number, it appears a typographical error was made. The author, in a communication, says:

"Errata: Page 155, line 5, par. 4; should read '49 hundred per cent.,' instead of '59.'

"Also: Par. 1, second col., page 155: Your editorial note takes exception to something I do not say. I say **almost** totally disregarded. Aeroplanes wouldn't fly at all if they entirely disregarded the rarefaction—since that is what produces levitation. Examine any detail photo of the usual plane and you will see there are hundreds of holes, loose lacings, etc., which allow the rarefaction to be interfered with by leaks from below. Vertical keels, instead of being joined to horizontal planes air tight, always leave a nice open space at the joint, which is decidedly coarse work.

Cordially,

JOHN D. PURSELL.

Aero Club Dinner.

More than three hundred real aviators, enthusiasts, experimentors, scientists and parlor aeronauts and aviators, attended the dinner given by the Aero Club of America and the Belmont tournament promoters to the aviators, even if some of the guests did attend an opposition dinner given by J. A. Drexel to his fellow birdmen. These, however, came in later with Grahame-White to see the presentation of the Gordon Bennett trophy. The dinner was held at the Plaza Hotel on October 31.

August Belmont, the president of the meet, and head of the Westchester Racing Association, which owns Belmont Park, made the preliminary remarks, apologizing for the meet's shortcomings by reason of lack of time in preparation and bad weather. Bishop then took the reins and presented the gold medal of the club to Messrs. Hawley & Post in honor of their winning the Gordon Bennett balloon race, and the making of a new world's record for distance. Alfred Leblanc, who lost the Gordon Bennett aviation race through his unfortunate accident, was presented with a loving cup in behalf of the meet committee. Bishop spoke in glowing terms of the brothers Wright, without mentioning their names, and complimented Johnstone on his wonderful new height record. Praise was showered upon Moisant, who won the Liberty prize. In response to repeated calls for a speech, Moisant told of his flight from Paris to London. This was but his fifth flight, and he had never been in England before. The story he told was of absorbing interest.

Pierre Gasnier spoke, followed by Gen. Nelson A. Miles. In succession were introduced Col. Schaeck, Capt. Von Abercron, Grahame-White and Jacques Faure. In replying Grahame-White paid his respects to Leblanc as his superior at the art of flying, and admitted with perfect frankness that he won "by the bad luck of Leblanc." He thought the new little Wright machine a marked improvement over the standard size flown at the Boston meeting. In closing his remarks he hoped to see good worthy American sportsmen next year in England, and "although we have very great hopes of retaining the trophy, we trust you will put up a very good sporting chance of returning it to this country." Latham spoke for a moment and complimented Johnstone on placing the American flag above all others.

After a short but eloquent speech by Walter Wellman, moving pictures were shown of the Wright aeroplane and the St. Louis balloon race, after which Hawley and Post each gave a short account of their experiences.

Clifford B. Harmon was presented with the Doubleday trophy for his flight across the Long Island Sound. Captain Thomas S. Baldwin was given a gold medal by St. Louis Aero Club men as an appreciation of his flights recently at that city, but this was not presented publicly.

But few of the aviators were present at this dinner as guests, as Drexel was giving a dinner at the same time at another hotel. Just after the speaking began, however, the insurgent aviators came in to see White presented with the cup. Some of the aviators state that they were not invited to the dinner, and therefore accepted Drexel's invitation. Neither the Wrights nor Curtiss were present at either dinner.

German Wright Patents Upheld.

In Germany a patent is worth something. One must go to court to prove a patent invalid, while in America the patentee must bring suit to find out if his patent is any good. In Germany a number of inventors formed a syndicate, and one of their number brought a suit to have the Wright patent declared of no value. The patent was upheld.

Appeal for Erecting a Memorial to the Honor of Otto Lilienthal.

Intense was the enthusiasm when Count Zeppelin's long and strenuous struggle for the conquest of the air was crowned with such unexpected success.

People's thoughts then turned to that hero who, as the first aviatiker, had realized the century-old wish of humanity to fly like a bird. The name of Otto Lilienthal was again in everyone's mouth!

By taking Lilienthal's life-work as its foundation, modern aviation has been able to acquire its great success! The first person to realize the great idea was also its first victim. Thus honor was denied to the discoverer during his lifetime, and this is now the time to pay off the debt of honor to this first hero of aviation by erecting a memorial for him.

May each one then contribute according to his means so that a worthy memorial may be erected to this pioneer of the clouds in Gross-Lichterfelde, where he lived and made his first attempts at flying.

From the contributions received it is also suggested that a confirmed invalid son of the inventor should be supported.

The Deutsche Bank and the Dresdener Bank, together with all their branches, say that they are willing to receive contributions for the "Lilienthal-Denkmal" fund. Kindly send postal orders to the "Arbeits-Ausschuss zur Errichtung eines Lilienthal-Denkmals," 45, Wilhelmstr., Berlin, W. 66.

Wellman Fails in Cross-Ocean Trip.

Walter Wellman, who left Atlantic City on October 15 in his dirigible "America" for a journey across the Atlantic, was rescued, with his crew, on October 18, by the steamer Trent, some 375 miles east of Norfolk, Va. One of the airship's engines was out of commission, and so much gas had been lost that the ship was dangerously near the ocean. When the Trent was sighted Wellman sent wireless distress signals, and after much manouvering, lowered the lifeboat with which the airship was equipped, pulling to the Trent. The ripping panel of the "America" was pulled and the airship was abandoned, Wellman stating that a larger and stronger one would be built, without an equilibrator, which proved to interfere with steering and transmitted the shock of the waves to the ship with a dangerous violence.

Thus one of the most remarkable flights yet made by an airship was brought to a close. That a tragedy did not accompany the climax is a matter of great good fortune, as the dirigible had been blown far away from the usual transatlantic steamer lanes and was almost outside the range of the coast steamers.

The distance the ship covered is more or less a matter of conjecture, but it is probably somewhere around 800 miles. After leaving Atlantic City, wireless reports followed the airship till it was off Nantucket, where the distance severed communication. The total time in the air was 71½ hours.

Aeroscribes Organize.

The National Aviation Writers' Association has been organized with the following officers: President, W. H. Leonard, Los Angeles, Cal.; district vice-presidents, John T. Custis, managing editor of the "Inquirer," Philadelphia; E. L. Jones, New York; Chester I. Campbell, Boston; E. Percy Noel, St. Louis; Victor Lougheed, Chicago; H. A. Somerville, Montreal; Paul Cowles, Atlanta; secretary, Arnold Kruckman, New York; western secretary, Cleve T. Shaffer, San Francisco; treasurer, George B. Harrison, Los Angeles.

The object of the association is distinctly stated "not to stimulate interest in aeronautics, make any profits or otherwise to interfere with the perquisites of aviators (joke!), but to provide accurate interchange of information regarding aviation and to advance knowledge of the correct terms concerning aeronautics and aviation." Local organizations to be known as "hangars" will be formed in all cities where newspaper men and others are interested in aviation.

Official headquarters have been established at the office of **Aeronautics**, 250 West 54th Street, New York, and at the club rooms of the Aero Club of California in Los Angeles.

Incorporations.

Smith-Matteson Mfg. Co., 6628 Delmar avenue, St. Louis, Mo.

The Thomas Aerial and Flying Machine Co., Evansville. Capital stock, $50,000. Object: To manufacture, buy and sell flying machines. Incorporators—H. B. Thomas, Charles F. Diessendorf, August Pelz.

Detroit and Cleveland Aerial Navigation Co. Capital, $25,000. The officers in the new company are identically the same as those in the Detroit and Cleveland Navigation Co.

Coyne Helicopter Airship Co., of Spokane. Capital, $2,000,000. M. E. Sullivan, Phil Dunne and W. E. Smith.

Cornelius Aeroplane Co., Fresno, Cal. Capital, $50,000. To exploit patents of C. H. Cornelius. Subscribers—Calvin Pearson, N. A. Wintemute, D. A. Cowan, C. H. Cornelius and James Warrington, all of this city.

The Boughton Flying Machine Co., Pierre, S. D. Capital, $1,000,000.

Christmas Aeroplane Co., Washington, D. C. Incorporated with $200,000 capital stock. William Christman, president, 725 12th street, N. W.; C. Calvert Hines, vice-president, Victor building; Robert Ions, secretary.

American Aeroplane Manufacturing and Exhibition Co., Philadelphia. Capital, $50,000

General Aviation Co., Quincy Building, Denver Colo. Capital stock, $150,000. President, E. H. Bjorkman; vice-presidents, Hamilton Armstrong, Alexander Stewart and Arthur C. Wagner; secretary, Irvin L. Richards; treasurer, Adolph Miller. The company has taken over the rights of the J. P. Erle aeroplane, which is reported to have made flights. Mr. Erle is the general superintendent.

Alden Sampson Mfg. Co., office at the Corporation Trust Co., 15 Exchange Pl., Jersey City. $2,500,000. Motors and flying machines. Incorporators: Kenneth K. McLaren, of Jersey City, agent of the Corporation Trust Company; Henry E. Tobey, of 120 Broadway, New York; James A. Dailey, of Ossining, N. Y.; Leon R. Jillson, of 202 West 74th St., New York, and William R. Watson, of 481 Sixth St., Brooklyn.

The "Trent" approaching the airship. The life boat of the "America" has not yet been launched.

Aeroplane & Automatic Balancing Machine Co., of Mitchell, S. D., incorporated for the sum of $150,000. The officers of the company are: President, A. W. Gaines, vice-president and general manager, F. Irving Kiser; secretary, W. A. Helmberger; treasurer, W. T. McConnell; attorney, Chas. F. Tym; superintendent of construction, George M. Ellis. The directors include the above officers and in addition W. E. Turner and Dr. B. A. Bobb. To exploit machines designed by George M. Ellis.

Book Review.

Hudson Maxim, president of the Aeronautical Society, has added another lasting contribution to science in his "Philosophy of Language and Science of Poetry." (Funk and Wagnall's, 1910.)

As his introduction well states, "The main object of the book is to provide a practical method for literary criticism and analysis and to provide an efficient and practical means for the standardization of poetry."

With the analytical mind of the scientific investigator Mr. Maxim has uncovered the underlying principles of sound and announced for the first time their operation in human speech. With premises that he makes self-evident, he hammers home conclusions that leave no room for refutation. He arrives at his definition of poetry—"the expression of insensuous thought in sensuous terms by artistic trope," after a masterful analysis of what is best in our language.

His book is a diet that high school and college students should be fed on, a work of art that no lover of literature can be without.—A. E. HORN.

L'Aviation de Demain, par Francois Ernoult, Ingenieur, un volume in-8°.—Librairie Aeronautique, 32, Rue Madame, Paris.

Se basant sur l'observation, qui permet de constater que, comparativement a nos aeroplanes actuels, les oiseaux depensent extremement peu de travail pour voler, l'auteur s'est rendu compte que les organes de ces derniers sont constitues, de telle facon qu'ils recuperent la presque totalite de l'energie necessairement employee pour vaincre les diverses resistances.

M. Ernoult nous devoile dans son ouvrage le secret de cette recuperation en nous en exposant le principe, qui se trouve etre d'une simplicite vraiment remarquable.

L'application de ce principe a nos appareils d'aviation permettrait de realiser a la fois et automatiquement la recuperation du travail de penetration et de sustentation, le vol a voile et l'equilibre automatique.

Des horizons nouveaux nous sont decouverts et l'avenir pourrait bien nous menager avant peu des surprises.

CLUB NEWS

The **Aero Club of America** held its annual meeting on November 14 and, as usual, elected the "regular" ticket, nominated by the board of directors. About 50 were present, of which, evidently, but 25 voted. It was expected that there would be some interesting proceedings, on account of the opposition ticket, but nothing very sensational occurred. After various reports and resolutions were read the result of the "vote" was announced. The regular ticket received an overwhelming majority, though solely by means of proxies. Practically everyone present who "voted" cast the opposition ballot amended in some form. There were said to be 205 proxies on hand, received after two urgent circulars were sent out to "members" by the club, out of club funds, so there was little chance for free expression of choice.

Gage E. Tarbell was present for a little while, but left, evidently in disgust. Clifford B. Harmon and many other prominent and active members were among those absent and whose proxies had not been sent in.

Talk of New Club.

There is much talk of forming a new body by the men in the Aero Club who are doing real work, though this scheme has not yet been put in any definite shape. There is another rumor afloat that it is not impossible that the club may lose its international affiliation.

The membership was announced as 392. Two years ago the number was but a hundred less, so little has been gained in membership. Many have joined, but many have resigned, among the latter being many well-known men.

There are three factions, at the least, now in the club. The old insurgent element which put up opposition tickets for two years, brought suits to set aside the election of a year ago, which was clearly shown to be illegal in the hearing of another faction, did nothing this year towards a ticket of their own, for some reason or other. And this faction has gained in strength. Then there is the old guard which stands by Bishop, with just a little new blood, and the entirely new element headed by Ryan, et al. More and more of the members are beginning to see what the Aero Club of America might be if properly handled. Life is beginning to be discovered among the membership, and the next year will undoubtedly see things done; whether in the right or wrong direction remains to be seen.

The Two Tickets.

Aero Club of America "members" duly received the usual yearly communication announcing the board of governors ticket for the ensuing year, together with a formal notice of the meeting and a blank proxy which members expecting to be absent might sign so that their votes could be counted for the official ticket.

Heading this ticket was Alan A. Ryan for president, J. C. McCoy, first vice-president; Dave H. Morris, second vice-president; James A. Blair, Jr., third vice-president. The members were notified to be ready to act upon recommendations for an increase in the number of governors from twelve to twenty, and the creation of a committee on foreign affairs.

The ticket for the board of governors included: Cortlandt Bishop, James A. Blair, Jr.; Chas. Jerome Edwards, Lyttleton Fox, Lawrence L. Gillespie, Alan R. Hawley, W. W. Miller, J. C. McCoy, Dave H. Morris, Maj. Samuel Reber, Alan A. Ryan and Samuel H. Valentine.

The following members of the old board did not find their names among the elect for the coming year: Philip T. Dodge, A. H. Forbes and Chas. A. Munn.

The additional governors in case the board be increased were named as follows: A. B. Lambert, of St. Louis; Dr. A. F. Zahm, of Washington; Prof. A. Lawrence Rotch, of Boston; Rodman Wanamaker, of Philadelphia; "Col." Jerome H. Joyce, of Baltimore; Russell A. Alger, of Detroit; Harold McCormick, of Chicago; and Prof. H. LaV. Twining, of Los Angeles, Calif.

It is at once apparent that the club desires to make itself stronger in national affairs, and a greater power in the "National Council of the Aero Club of America," which has not been heard of since its tumultuous creation, and which, Dame Rumor has it, will before long have an "s" after the word "club."

On the night of the Aero Club dinner, October 31, an opposition ticket appeared in the field, with Cortlandt Bishop for president, Clifford B. Harmon for first vice-president, J. Parke Channing second vice-president, and Peter Cooper Hewitt for third vice-president, with some changes in the board of governors list. The sponsors for this ticket included Alfred Wagstaff, Captain T. S. Baldwin, Christopher J. Lake, Arthur Johns, H. C. Drayton, Winslow Busby, A. P. Flagler, Jefferson Seligman, E. E. Schwarzkopf, W. D. Gash, W. E. Hutton, Samuel F. Perkins, K. M. Turner, George H. Guy, P. C. Hewitt, F. L. Hoppin, Waldron Williams, A. E. Gallatin, J. H. Wall and Samuel Robert.

These are all friends of Bishop who believed in continuing him as head of the club in return for the alleged good conduct of the club at his hands in the past. Strange to say, however, upon the posting of this ticket Bishop and Channing as officers, and Morris, Hawley, Edwards and McCoy named for governors, wrote a letter requesting withdrawal of their names from the insurgent ticket, and announcing that they had been placed on such ticket without authority or consent. Wagstaff thus had played on him the same trick that he played on the old insurgents a year ago, when he withdrew from their ticket.

The opposition wants to know what Ryan has done to further aviation outside of his work on the Belmont Park tournament. Clifford B. Harmon has many friends in the club who appreciate the fact that he is the only amateur flying in this country and want to see his activity where it will benefit the club.

Friction developed at the banquet of the Aero Club of America, and the tournament committee to the aviators, between Clifford B. Harmon and Alan Ryan. In this little tilt it was suggested to Ryan that he would "make a —— of a president," and the compliment was returned in like manner.

Plans for Club House.

For "materially adding to the comforts and benefits of the members of the club," the latest notice to the members states "the obtaining of a small club house in a convenient and desirable location" is "most important." No meeting of the members of the club has been held for a year, and it is a long time since the members have had advices of new members joining, as is required by the by-laws What a club house will do towards benefiting the members, who have no part in the conduct of the club, is an open question.

The only time club members have been asked by the lordly custodians of its affairs was just before the Belmont meet, when they were begged to act as spotters at the "pylons" from 1:30 P. M. until the close of the day's flying, to keep track on record sheets of every aviator who passed that way, whether he "cut corners," etc. For this service one ticket of admission to the grounds was given each of the favored members, who were supposed to be herded in the club house when not on duty.

Among those who are supposed to be members, but announcements of whose applications for membership have not been sent out in accordance with the by-laws, is Alan Ryan himself. It is claimed by insurgents that to be legally a member, the other members must be duly notified in accordance with the by-laws, and it is further contended by insurgents that it cannot be in accordance with the by-laws, and, therefore, to vote for additional governors before the amendment increasing their number was legally passed.

Another feature claimed is that to suspend the by-laws while voting for additional governors required a unanimous vote in accordance with Sec. 2 of Chapter 10 of the by-laws, and not over one-third of the members present voted, while the balance did not vote at all. Yet it was called a unanimous vote, which was apparently not the case.

The same argument applies to the reduction of the initiation fees to $25 instead of $50 until March 1, 1911, those voting composing only a small unanimity of the members present.

The Aero Club of New England will observe the 127th anniversary of the first ascension of man in a balloon, and hold its annual banquet at the Hotel Somerset, Commonwealth Avenue, Boston, on Monday, November 21, at 7 P. M.

Among the invited guests who expect to be present are Walter Wellman and his engineer, Melvin Vaniman; Augustus Post, of the balloon America II, the world's champion long distance balloonist and winner of the recent international balloon race; Samuel F. Perkins, a member of our club, who sailed in the balloon Dusseldorf in the same race; Mr. Claude Grahame-White, the noted English aviator; and Mr. Wilhelm Heinrich, the first sightless person to make a balloon ascension.

The annual meeting of the club will be held at 6 o'clock at the same place, at which meeting the question of purchasing an aeroplane will be discussed.

The Williams Aeronautical Society was formed on October 13 by students at Williams College, Williamstown, Mass., with H. Percy Shearman, the prime mover, president; George Orr Latimer, vice-president; Robert O. Starrett, secretary; R. K. Johnson, treasurer. Thirty men started the organization, which doubled itself in three days. A balloon ascension is being planned under the auspices of the club, and a course of lectures will be given during the winter by prominent men in the art. A library will be formed, and a construction committee has been appointed, on which are several men who have had practical experience. The services of Glenn Curtiss and Leo Stevens will be sought as consulting engineers. Stevens has already accepted.

President Shearman has designed a "flying bobsled" to be used during the winter. After a winter of active and systematic work it is possible an aviation meet will be held in the spring.

The Aeronautical Society listened to an interesting and valuable talk on November 10th by Mr. R. C. Gildersleeve, of the El Areo Radiator Co., on the subject of the "Cooling of Motors." Edward Durant was another speaker on the subject of the gyroscope.

To promote and diffuse a more technical knowledge of the science of aviation among the members of the society, the following list of subjects covering the art has been arranged, upon which members are invited to write essays to be read in regular meetings of the society: "Aerodynamical Formulae and Calculations," "Planes," "Aeroplane Stability," "Propellers," "Aeroplane Construction," "Motors," "Learning to Fly." Benjamin B. Carmina has offered a gold medal to the one who, writing upon the seven subjects, shall be adjudged to have presented the best series. Other prizes will be offered for separate essays.

The society has issued two more of its "Bulletins" giving verbatim accounts of talks and addresses delivered before the society since its formation practically. These are of absorbing interest.

At the prior general meeting, held Oct. 27th, the speakers were Mr. Harry M. Horton, on the "Application of the Wireless Telegraph to Aeroplanes," and Mr. Melvin Vaniman, the engineer of the Wellman airship "America."

Mr. Horton's adddess outlined the difficulties encountered in making apparatus light enough and yet sufficiently powerful to send impulses several miles, and the best results so far obtained were with an outfit weighing 30 pounds, used by Mr. J. A. D. McCurdy at Hammondsport, which had reached 40 miles.

Mr. Vaniman gave a most instructive and impromptu recital of experiences with the airship "America," beginning with his first meeting with Mr. Wellman in Paris in 1906, when the work commenced. After completion, the ship was taken to Spitzbergen, where endless difficulties were encountered in efforts to reach the North Pole, and finally the last trip, starting from Atlantic City, until rescued by the S. S. Trent after a record flight of three days, having traveled nearly 1,000 miles. The greatest source of trouble was the equilibrator, of which so much has been heard, and yet Mr. Vaniman is convinced that without it no success can be obtained, the unfortunate experience met with on their voyage being due to storms and 40-mile winds, which are always likely to upset the most carefully laid-out plans.

The **Dayton Aeroplane Club** held a smoker and banquet on November 2. Among those who responded to calls were E. W. Shroyer, A. E. Estabrook, Dr. O. J. Needham, G. R. Wells, Postmaster F. G. Withoft, Dr. J. C. Eberhardt and A. G. Clark. Dr. Eberhardt was one of the judges in the recent Belmont Park international aviation meet, and his talk was unusually interesting, as he made extensive comment upon the recent flights and their significance to the development of aerial navigation.

Business was taken up and the question of the erection of an aerodrome was discussed.

An Aeronautical Club is to be formed at the University of Michigan, Ann Arbor, Mich. At a meeting of the students held to discuss the matter over a hundred were present. Regular meetings will be held for the reading of papers and the holding of arguments, and later on it is hoped to do some practical work.

Professor Herbert C. Sadler is working on some apparatus for experimenting upon aeroplanes and propellers, and it is expected that work along this line will be started the first of the year. It is also probable that some regular work will be offered by the University at the beginning of the second semester.

The **Walla Walla Aero Club** has been incorporated for $5,000, at Walla Walla, Wash., by L. E. Meachan, C. S. Walters, C. R. Offner et al.

It might not be a bad idea if the various aero clubs in the country held members' meetings once in a while. The Aero Club of America had no members' meeting, or lecture, until the annual election, for about a year. The Aero Club of Michigan has had but its organization meeting. The clubs in this country that are other than but a name could be counted on the fingers of one hand—and there are more than eighty so-called "clubs." ——"But what's the use?"

A NATIONAL ORGANIZATION

MORE than ever before is there a need for a national organization that is national. Foreseeing the present, many active clubs urged such a body a year ago, and succeeded in gathering together the delegates for a big national league.

Lulled by the siren song of the Aero Club of America and enticed by magnified promises, the delegates were cajoled into forming the "national council of the Aero Club of America." Once subdued, the A. C. A. proceeded to forget its child. Not a cent of dues has ever been paid in by the clubs belonging, and nothing has ever been heard of the "council" since its relegation to oblivion.

With the Aero Club of America in a worse state than ever before, likely to lose its foreign affiliation the moment there is a national organization of the proper kind to contract an agreement, the present "council" dominated by the A. C. A., it is high time that club men with red blood in their veins, interested in the actual progress of the art, get together and evolve the right kind of a broad, really, truly democratic national body; or else resurrect the "national council," perform a few amputations, add the clubs now outside, put the Aero Club of America on the same basis as the other clubs, and DO SOMETHING.

Index for Volume 7.

Index for Volume 7 will be printed in the January number.

The English "The Car" seems to have it "in" for Americans. First it has Hamilton and Walden in the death list, and next it says that Ogilvie and White were the only two to complete the Gordon Bennett course. Then, too, the international balloon race results gave America "a new record for this sport in the New World." With the exception of de la Vaulx's record, and within 20-odd miles of that, it seems to be pretty nearly a world record for balloon races.

Since the famous flight of Henry Farman, in January 1908, says "Conquete de l'Air," when he won $10,000 for a flight of but 1 kilometer, one can estimate the prizes received by aviators at $600,000. The biggest winnings have been made by Leon Morane, perhaps, who, since the meeting at Rheims in July of this year (in three months) has won $60,000.

PRINCIPAL FOREIGN EVENTS

Flies with Passenger from Paris to Brussels and Return.

PARIS, Oct. 16.—Henry Wynmalen, the Dutch aviator, recently holder of the world's altitude record, and M. Legagneux, the French aviator, each with a passenger, made a remarkable trip in biplanes to-day from Paris to Brussels. They started from Issy with an interval of an hour and a half, in an attempt to win the $20,000 offered by the Automobile Club and the $5,000 offered by the municipality of Paris for the best flight with passenger to Brussels and return.

Wynmalen, after reaching the Belgian capital, with one stop on the way, started almost immediately on the return trip, and arrived safely that evening at St. Quentin, where he spent the night. The next morning he started again. After three more intermediate stops in the morning, he arrived safely back at Issy. His passenger was Louis Dufour. Total time occupied was 28 h. 36 m. 43 s. for the total distance of 380 miles. The time in flight was 13:12:28.

Legagneux and Martinet, after making one stop going, started back the following morning, but got, after one stop, only as far as St. Quentin, where he damaged his machine in avoiding some spectators, and abandoned the trip. Both used Farman machines.

First Two-Man Flight Over Paris.

Paris, Oct. 16.—Legagneux, with passenger (Farman), Wynmalen (Farman), and Maurice Farman (M. Farman) all maneuvered over the city of Paris, Wynmalen flying about the Grand Palais and around the Eiffel Tower. On the 19th Robert Thelen (German Wright) flew over Berlin. Lieut. Savoia (Farman) recently flew over Rome.

Military Aviator Killed.

Douai, France, Oct. 23.—Capt. Madiot, military aviator, was instantly killed flying for the first time alone a Breguet biplane. Previous flights had just been made by M. Breguet with Madiot as passenger, and even with two passengers.

An examination of the machine showed all wires intact. Accident evidently due to personal equasion

German Duration Record.

Darmstadt, Germany, Oct. 24.—August Euler (Euler) made a new German duration record of 3 hrs. 6 min.

Military Airman Killed.

Magdeburg, Germany, Oct. 25.—Lieut. Mente fell with a Wright aeroplane and was killed instantly.

The lieutenant was gliding to the earth when he started his motor. The strain caused the machine to turn turtle.

The weather was bad, and he was the only one to risk a flight.

Aviator Blanchard Killed.

Paris, Oct. 26.—Fernand Blanchard, the aviator, fell from a height of 100 feet and was killed.

The accident occurred over the field at Issy-les-Moulineaux, where M. Blanchard was gliding down after a successful flight from Bourges, about 125 miles.

MM. Blanchard, Bregi and Bielovucci, who had participated in the aviation meeting at Bourges, decided to return to Paris through the air. Bregi arrived first, having covered the distance from Bourges to Paris in 4 hrs. 10 min. Blanchard was a close second, and was hovering over the aviation field at Issy-les-Moulineaux as though selecting a convenient landing place, when his Bleriot, for some unexplained reason, fell like a stone.

World's Record Again Broken.

Buc, France, Oct. 28.—M. Tabuteau broke the world's distance and duration records.

Flying his Maurice Farman biplane, fitted with an 8-cylinder 60 h. p. Renault motor, he started out with the intention of competing for the Michelin Cup for the longest distance covered up to the end of the present year.

Without the slightest hitch he continued to circle round the aerodrome hour after hour with remarkable regularity.

The aviator alighted after having flown for 6 hrs. 1 m. 35 s., having covered in a single flight a distance of 565 kil. (288.7 m.). He consumed 190 litres of gas and 20 of oil. The old record was that of Olieschlagers, 244.3 m. in 5 h. 3 m. 5 1-5 s.

Mathieu Flies from Paris to Brussels.

Brussels, Belgium, Oct. 29.—Mathieu, the French aviator who started with a passenger from Issy the previous day in a flight to Brussels in an aeroplane, but who was forced to make landings at Dravecy and Braine-le-Comte, Belgium, arrived here this morning. A night stop was made at Braine and the flight resumed in the morning.

It had been his purpose to start on the return voyage immediately, but he abandoned the return flight because of trouble with his machine.

Government Airship Sails Channel.

London, Oct. 29.—Announced that the government would buy the Clement Bayard airship, which sailed from Lamotte-Breuil, in France, to the shed erected by the London "Daily Mail" at Wormwood Scrubbs, on October 16. There were six in the crew and passengers, besides Alphonse Clement, the designer and builder. The distance is about 240 miles. This was accomplished without stop in 6 hrs. 16 min. Last year the Russian government bought the dirigible built for England. Then the French government requested the trip of the second airship delayed until after the army maneuvers this fall.

After some argument the War Office offered $62,500 for the airship without tests. Harvey Du Gros generously made up the balance of the $90,000.

The airship is known as the "Clement Bayard II.," 7,000 cubic metres capacity, 260 h. p. The average speed of the trip was 38.7 m. p. h.

Another Fatality.

Rome, Nov. 3.—Lieut. Saglietti fell with an Asteria biplane in which he was maneuvering today and was instantly killed. The machine was wrecked.

The officer had made a good flight, and was gliding down, when, at a height of about 50 ft. from the ground the machine refused to respond to the elevator. Lieut. Saglietti tried to jump clear of the machine, but fell, and the machine crashed on top of him, killing him instantly.

Second Airship to Cross Channel.

London, Nov. 4.—E. T. Willows and an engineer sailed an airship of his own design from Wormwood Scrubbs to Corbehem, near Douai, France. In landing the framework was damaged and on account of weather conditions the return trip was not made. The start was made at 3:25 P. M. At 10 P. M. the vessel was sent up to 5,500 ft. to clear the clouds and steer by the stars. At 2 o'clock in the morning the landing was made.

Cody Makes Record.

London, Nov. 1.—Capt. S. F. Cody, in trying to beat the British Michelin Cup record, flew for 2 hrs. 24 min., covering 94½ miles. This is the best record so far.

Skyscrapings.

The F. A. I. has fixed new rules for pilot licenses Minimum age, 18 yrs. Two tests over closed circuit of 5 km., one for height of at least 50 m Course in figure 8 around and between 2 posts 500 m. apart. Each flight to be ended by gliding with motor stopped, and within 50 m. of a point previously designated by entrant.

On October 29 Henry Farman carried four besides himself on a machine of more than usual surface. The load carried totaled 380 kilos.

According to a dispatch from Berlin, the German War Office has decided, as a result of the recent tests carried out by the military authorities, to buy five aeroplanes of different types, including a Wright, an Aviatik, a German-built Sommer, a German-built Farman, and an Etrich monoplane.

Count Lambert has made trial flights with a Gnome-engined Wright.

A number of French manufacturers have started suit in France to have the Wright patent annulled. It is claimed the system of warping was patented in 1900 by Theodore Dobresco.

Louis Paulhan has just been awarded the "Daily Mail" $5,000 for the greatest distance flown cross country between Aug. 15, 1909 and Aug. 14, 1910. His mileage was 801 miles.

IN THE AERIAL MARKET PLACE

TO OUR FRIENDS—We would appreciate it very much if you would specify in writing advertisers that you saw the ad. in AERONAUTICS. This will help us, and eventually be of equal service to yourselves.

Curtiss Motors for Immediate Delivery.

Curtiss 25-h. p. motors can now be obtained, with prompt deliveries, from G. H. Curtiss, Hammondsport, N. Y.

This motor is 4-cylinder vertical, water cooled, and has a 3⅝-in. bore and 4-in. stroke. The cylinders are castiron with copper jackets homogeneously welded on. Lubrication is by a force feed system, the pump being built in the case and operated from the cam shaft. The oil is fed through the hollow cam shaft to the main bearings, thence through the hollow crank shaft to the crank and connecting rod bearings, the overflow from the case returning to a separate reservoir underneath the motor from where it is again pumped through the system.

The crank case is of a special aluminum alloy and the crank shaft of Vanadium steel. The valves are both in the head and are actuated by single push rod and cam. All the parts of the motor are made of special materials secured expressly for these motors.

The weight, including the oil and water pumps, is 90 lbs. Ignition is regularly by Bosch high tension magneto, driven by enclosed gears. The magneto weighs 12½ lbs.

The motor develops 25 h. p. at 1,300 r. p. m., but has a maximum speed of 1,800 to 2,000 at which it develops considerably more. All the bearings are of very liberal dimensions.

Duralumin, a New Metal.

For years past a large number of inventors have been endeavoring to find some alloy which would combine with the light weight of aluminum the characteristics regarding strength and elasticity so far found only with the heavier metals. Attempts were made, particularly in Germany, to obtain an alloy of aluminum and magnesium, a metal even lighten than aluminum, and for a while it appeared as if the goal had been reached. From the weight of magnesium it follows of course that the specific weight of these alloys was even smaller than that of aluminum, decreasing more and more with the increased amount of magnesium added to the aluminum. The hopes entertained with regard to these alloys were disappointed as they soon disintegrated, becoming brittle and therefore useless.

The new alloy, to which the name Duralumin—i. e., hard aluminum—has been given by its inventor, consists of more than 90 per cent. aluminum, but small additions mainly of copper and magnesium, have changed its mechanical characteristics absolutely. From the fact that only a few per cent. of other metals have been added, partly heavier and partly lighter than aluminum, it follows that the weight of the new alloy is practically the same as that of the aluminum. The appearance of the alloy is also that of aluminum, retaining, however, its bright color unaffected by the atmosphere or water. Attempts at bending a rod or plate will soon reveal how the metal differs from aluminum, for while a good-sized bar of the latter material can easily be bent, the Duralumin pieces will show the resistance of steel. Technically speaking, the alloy shows, according to the particular mixtures used and according to the treatment it has undergone, a tensile strength of from 50,000 lbs. up to 85,000 lbs. per sq. in.; this means a rod of the latter alloy of 1 sq. in., cross section, suspended vertically will require a load of 85,000 lbs to break it. At the same time the rod will weigh only about one-third as much as a similar rod of steel.

The importance of this new material, if the inventor's claims prove true, can hardly be overestimated, for while the alloy must necessarily be high in price when compared with steel owing largely to the fact that for its production aluminum is used as the raw material, there are many fields where the large reduction in weight will more than offset the difference in cost. The field is by no means limited to aviation, but in marine and automobile engineering it offers the greatest possibilities and will be used to a large extent.

The English government has under construction a large dirigible for which Duralumin will be used, and is also employing a considerable amount of it in connection with the construction of a new cruiser in order to test the capacity of the material for resisting the influence of sea water, one of the strongest claims advanced by the inventor.

The new alloy is being manufactured in Europe by various concerns, best known among whom are Vickers Sons & Maxim of England. Arrangements are under contemplation looking towards the production of the alloy in America. Marburg Brothers of 1777 Broadway, New York, are representing the inventor in this country and exhibited a few sample pieces for the inspection of those interested at their exhibition in connection with the Belmont Park meet.

The specific weight varies according to the particular alloy used from 2.77 to 2.84. The melting point is at 650 deg. C. According to the particular purpose for which the material is to be used an alloy can be produced which will show greater or less ductility.

Large Pennsylvania Tires.

The development of the aeroplane, which gives promise of so soon becoming of great utility, gives rise to the demand for a tire suitable to its special use.

The Pennsylvania Rubber Company claims to be one of the few manufacturers making a tire of 4 in. in diameter for this purpose, and these tires have been used with success by P. W. Wilcox, of Columbia University, Clifford B. Harmon and H. P. Dietz, of Mineola.

These tires are especially designed to withstand the shocks of alighting, and have little cushioning effect.

The 20 in. x 4 in. aeroplane tire which the Pennsylvania Rubber Co. are making is fast becoming very popular.

Two of these tires will carry a ten or twelve hundred pound flyer, and will have sufficient cushioning effect to prevent the jar of alighting being transmitted to its delicate framework.

Warner Moves Advertising Department East.

The Warner Instrument Co., of Beloit, Wis., makers of the well known Warner Auto-Meter, will conduct their advertising from their New England offices, 925 Boylston Street, Boston, after December 1st.

Their advertising and the New England territory will be in charge of W. A. Merriam, who leaves Lord & Thomas, one of the country's largest advertising agencies, to assume this position.

The Warner Company are to be congratulated on securing a man of such prominence in advertising affairs to look after their interests

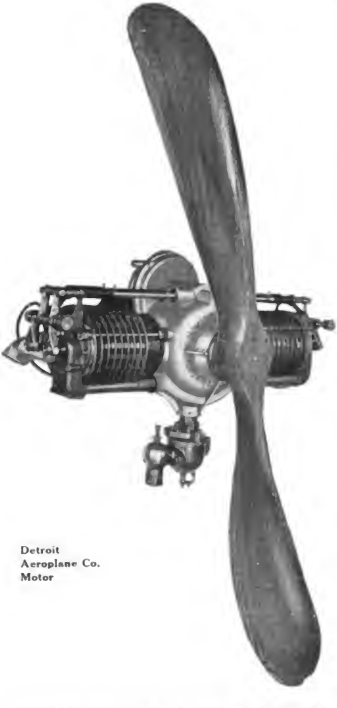
Mr. Merriam's advertising experience dates back some dozen years or more, when he was a charter member of the first regularly organized advertising department of Armour & Co., of Chicago.

After leaving this firm, he became advertising and sales manager for one of Chicago's wholesale clothing houses, and was later sales manager of the Brand Stove Company of Milwaukee, Wis., makers of "Famous" Stoves and Ranges.

In December, 1904, he assumed charge of the copy department of Lord & Thomas at the time their "Reason Why" copy campaign started the revolution in the advertising field. In this capacity Mr. Merriam was responsible for the production of the advertisements used by a very large number of the most successful advertisers in the United States. From this position he was promoted to the management of the merchandising department and sales aid department, which he leaves to assume the position of Eastern and advertising manager for the Warner Company.

Detroit Air-Cooled Motor.

In the field of aeronautics the air-cooled motor works under quite different conditions than in the auto camp. Here it is freely exposed to the cooling draft of the craft at full speed; there it is tightly enclosed in a metal hood. Besides this advantage offered by the nature of aerial flight, the Detroit Aeroplane Co. believes the construction of their double opposed type has helped considerably in the solution of the cooling problem. In this type of engine the cylinder heads in which the internal combustion occurs, are arranged several feet apart and are entirely separated by the hollow crank case and cannot radiate the heat one to the other.



Detroit Aeroplane Co. Motor

Besides that, the engine being air-cooled is especially designed for this purpose inasmuch as the valve sections of enormous area have been employed. The exhaust valve through which the burned gas departs into the air, for instance, is 3 in. in diameter. On the other hand, the extremely large air-cooling flanges which run over the whole cylinder surface has been arranged at double the distance that customary practice shows. This is done to avoid the reciprocating action of the radiation from one rib to another and has been thoroughly tested out on French and German motors.

By means of the double throw crank shaft the pistons are forced in opposite directions, and as a result a stream of air is thrown steadily inside the crank case and cylinder by each revolution, which helps considerably to lower the temperature of piston and cylinder walls. All this in connection with the wide spread of the cylinder heads, which are directly exposed to the air draught of the propeller warrants a most efficient cooling under propeller load.

Tiger Cycle Works Increased Plant.

The Tiger Cycles & Aeroplane Co., 782 Eighth Ave., New York, has improved its welding and brazing plant so that it can repair any and all broken parts of motors. The company can also undertake to build on short notice light steel tube frameworks which, it believes, will sooner or later be used in preference to wood. A loft of 5,000 square feet has been secured to give room for building complete machines. Wheels and tires can now be supplied as follows: 14 in., 16 in., 18 in., and 20 in., x 1⅝ in., 1¾ in., and 2 in.; and 20 in. x 4 in.; 26 in. and 28 in. x 2¼ in. and 2½ in.

The name of the company has been changed from the Tiger Cycle Works Co. to the Tiger Cycles & Aeroplane Co.

New Rotary Motor.

As a result of experiments in improved aeronautical motors of the rotating cylinder type of Emile Berliner, of Washington, D. C., a company is being organized and a plant erected for the manufacture of aeronautical motors on a large scale.

El Arco Twin Radiators.

Recent twin radiator installations have been furnished by the El Arco Radiator Co. to Philip Wilcox (two 38 H. P.), Monmouth Aerial Co. (two 23 H. P.), Miss E. L. Todd (two 45 H. P.), Rexford M. Smith (two 38 H. P.).

H. W. DuPuy has recently taken a 90 H. P., J. J. Frisble a 60 H. P., Glenn H. Curtiss a 70 and 75 h. p., B. F. Roehrig a 60 h. p., and another to C. C. Barnett.

Some Details of the Rinek Engine.

In view of the remarkable flight which resulted in the first tryout of Miss E. L. Todd's aeroplane at Mineola the past month, a few particulars of the Rinek engine which made possible the success of the machine will not come amiss, as these engines without a doubt are coming to be recognized as one of the most perfect types of engines on the market to-day.

The engine used on Miss Todd's plane is of the eight-cylinder "V" type, nominally rated 60 h. p., which power develops at 1,200 r. p. m.

The eight separate cylinders of these engines are arranged in two groups of four on a common "V" shaped crank case, sets being at right angles to one another, employing a four-throw crank shaft, each pin carrying the connecting rods of a pair of opposite cylinders, which are staggered in relation to one another. The cylinders, which are of a special grade cast gray iron, are machined inside and out, which insures the walls being of uniform thickness, thereby obtaining equal expansion and contraction.

The cylinders being of uniform capacity, it naturally follows that uniform compression is also obtained, and so perfect balance. Jackets are of hard spun copper, pressed on in a special manner, making a water jacket which is guaranteed to be absolutely water tight under all running conditions. By this special process, joints are produced that have entirely done away with the troubles experienced by others who have tried to depart from the practice of casting the jackets with the cylinders. This arrangement insures a perfect circulation which cannot exist in a cylinder whose jacket is cast with it, since in that case it is necessary to have the webs between the cylinder and jacket, which naturally form a bar to perfect circulation. In addition to this, it must be remembered that the copper jackets themselves materially assist the process of radiation, owing to their high conductivity.

The connecting-rods, which are of a special metal, actuate a four throw crank shaft with cranks in pairs at 180 deg. Crank shafts are of the highest grade of chrome nickel steel alloy, special heat treated and hardened, and accurately ground to size. They are fitted at one end with a double ball thrust bearing, to take the "pull" or "push" of the propeller when fixed direct on the crank shaft.

The single cam shaft operating all the valves is hollow, of high grade chrome nickel steel, and carries the eight double-acting cams, each of which operates both the exhaust and the inlet valve on each cylinder, by means of overhead rockers, the vertical tappet rod of which is designed both to "pull" and to "push."

The valve cages, which are inclined in the head of the cylinder at 20 deg., contain the two valves, which are of a special nickel alloy, and in accordance with late practice, extremely large.

The valve springs are taper for lightness, and are kept in place by a very neat form of collar and cotter.

Standard Bosch ignition is employed on both types of engines, same being driven by a gear off the cam shaft.

The engine is fed by a two jet carburetor in connection with an intake system which is at once unique and original in design. By this system an equal amount of gas is delivered to each combustion chamber, as can be demonstrated by the remarkable flexibility of the engine, the speed of which it is possible to vary without a miss from less than 200 to 1,230, its maximum r. p. m., which in turn permits a range in thrust varying from less than 90 to 386 maximum, and all without the suspicion of a misfire.

Pistons are of the same grade iron as the cylinders, in order that they may have the same degree of expansion, and are ground taper to allow for the greater expansion of the head where the heat is the greatest.

The lubrication of the various parts of these engines is insured by a constant circulation of oil, under pressure from a force pump actuated by an eccentric on the crank shaft, and fed by a pump leading from a sump under the centre of the base chamber. Oil is maintained at a constant pressure by means of an adjustable bypass on the distributor. By this system all attention to lubrication is obviated, the engine attending to its own requirements under all flying conditions.

Burgess Company Building White Machines

The Burgess Co. & Curtis, of Marblehead, Mass., are building seven biplanes on order for Claude Grahame-White. As Mr. White is familiar with the product of almost all the principal foreign manufacturers, his indorsement of the Burgess-Curtis factory is to be very much appreciated. The standard Burgess-Curtis biplanes are, of course, being turned out in addition.

The Harriman Motor Works report re-orders have been received for 1911 model 50 h. p. by them from James E. Plew, 240 Michigan avenue, Chicago, and M. A. Marquette, of Indianapolis, Ind., who has a large Curtiss-type. Plew has a 30 h. p. in his Curtiss and will use the 50 in his Farman type. Louis G. Erickson, of Springfield, Mass., has bought a new model 50 h. p.; William Gary, 70 Lincoln avenue, Totoway Borough, Paterson, N. J., is another purchaser.

The California Aero Mfg. & Supply Co. report the sale of two Elbridge motors, one of 40-60 h. p. to Head & Goodman of Chico, Cal., and one of 60-90 h. p. to the Western Aviation Co. of Oroville, Cal. Mr. Ovar Meyerhoffer, manager of the latter company, is superintending the construction of a large machine, built according to their patents, in the California Aero Mfg. & Supply Company's shops.

The appearance of the new aeroplane built by Walter Christie, with two big star-shaped engines driving two propellers, in opposite directions, brought out the suggestion that it would be a good scheme to appoint holders of electric chair certificates to the jobs of piloting all freak flying machines, with freedom as the reward if they make good.

Classified Advertisements

YOUNG MAN, 21, steady, wants position with aviator or factory. Will start at beginning to learn business. Reference. Address Pierce, 31 North Florida Ave., Atlantic City, N. J.

CURTISS AERO MOTOR. $500 less than cost. Genuine Curtiss aero motor, 4 cyl., 25 h. p., water cooled; 95 lbs weight with magneto; used practice flights only; better than new. Arrowplane Mfg. Co., 65 Washington St., North Boston.

BACK NUMBER WANTED—Will pay $1.00 for copy of "Aeronautics" of May, 1909. Address A. C. A., care of "Aeronautics."

Single Back Numbers or Complete Sets of all Aeronautical Publications, at cost or less: "Aeronautics," "Fly," "Aircraft" (English), "Flight," "The Aero," "Automobilia" and "Flight," etc.

E. F. STEPHENSON,
238 Driver St., Memphis, Tenn.

FOR SALE—Bleriot monoplane, 24 h. p. Anzani motor, imported from Bleriot factory this year. Will sell big sacrifice by aviation company closing up its business. I. A. A., care "Aeronautics."

FOR SALE—20 h. p. 4-cylinder, air-cooled, genuine Curtiss motor. Has been used very little. In good condition. Weight 100 lbs. Used in 650-lb. biplane which made jumps of 200 yards. Have since installed larger motor. Price $325. Address L. B. 725, Morgantown, W. Va.

BLERIOT TYPE MONOPLANE. Exact copy. Finest possible workmanship. Best material. Has carried two men weighing 320 lbs. on numerous flights. In absolutely perfect order. Price without motor $300. Cost double that to build. Can ship knocked down. Photo or demonstration.

ELBRIDGE 40-60 h. p. "Featherweight" motor. 4-cylinder with 8 ft. Gibson propeller and El Arco radiator; $700 or offer. Have also a 2-cylinder 20-30 h. p. Elbridge with 6 ft. propeller, $300. Compelled to quit flying. Address "C. S.," care **Aeronautics.**

WANTED.—Someone to finance cost of a complete motor for a biplane to be used in an attempt to win prize offered for flight across continent. Address F. C. Hild, 410 Douglass Street, Brooklyn, N. Y.

FOR SALE—3-cylinder Anzani motor, latest model, all complete, at less than cost. Kenney, 27 Lansdowne St., Boston, Mass.

FOR SALE—One 50 h. p. "HF," or Harriman, aviation engine; new; $700. This is the same size engine that the Harriman Motor Works are charging $1,675 for. Address Box 3, Girard, Kansas.

TYPEWRITERS—All makes. Caligraphs $6.00; Hammond, Densmore $10.00; Remington, $12.00; Oliver $24.00; Underwood $30.00. 15 days' free trial and year's guarantee. Harlem Typewriter Exchange, Dept. F, 18, 217 West 125th St., New York City.

FOR SALE—Original Farman and 2 Gnome engines. All in perfect condition. Immediate delivery. Buying 70 h. p. Gnome. Address Gnome, care **Aeronautics**, 250 W. 54th St., New York.

COMMUNICATIONS

Transmission Device

517 Commonwealth Ave.,
Salt Lake City, Utah, Oct. 22, 1910

To the Editor:

Inclosed is a sketch of my own idea, suggesting a special sprocket wheel for a propeller shaft that might be used in connection with running two motors to one propeller shaft of an aeroplane. Each motor drives the propeller shaft through the sprocket wheel rim, pawls and ratchet wheel hub, the latter being keyed to the shaft. In case one motor stops, the propeller shaft can still rotate, driven by the other motor, while the rim of the sprocket wheel from the dead motor remains stationary, the ratchet hub sliding over the pawls, which are connected to the rim. This would remove all trouble of a friction clutch or tight and loose pulley.

I ask you to please publish this in "Aeronautics" to prevent anyone attempting to patent it.

Yours truly,
H. F. WEBB.
Member of the Aero Club of Utah.

Hearst Prize Open For Dirigibles

Editor "Aeronautics."
New York City, N. Y.

Sir:

Referring to the prize of $50,000 which Mr. W. R. Hearst offers to the aviator who first completes the flight across the American continent within an elapsed period of thirty days, I am sure that the following suggestion—offered in the same spirit that actuated Mr. Hearst, namely, out of an earnest desire to stimulate the development of aerial craft that will prove of permanent service to mankind—will be accepted in good part.

First permit me to point out that the recent development of the aeroplane, although convincingly and abundantly demonstrating to the "man in the street" cleverly built machines that fly, has after all merely followed the data and the plans of Prof. Langley, who brought the atmosphere, its peculiarities and its movements within the exact sciences, and of Prof. Simon Newcomb, who disclosed its abstract possibilities and limitations. The structural and mechanical development of the aeroplane, therefore, has been along the lines of perfection in detail, motive power, etc., rather than its broad fundamentals.

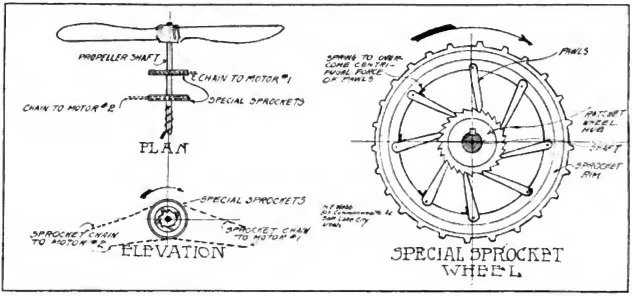
Now, the conditions under which the Hearst prize is offered, although they follow the general terms of the London "Daily Mail" prize and the Hudson-Fulton prize, confine the award to a machine already developed. A prize of this magnitude is potent of unlimited results in stimulating the development of aerial craft.

While the status of the art of aviation has risen in public opinion within a brief period from ridicule and scepticism to recognition and an abiding respect that abundantly compensates those who have earnestly led the campaign of education and the development of the science, there still remains some matters which should be impressed upon the public as well as on some aeronauts.

Abstract speculation leads the way, of course, in all research. In the building of machines by rule of thumb it is possible that inventions may be made by accident occasionally, but the great fundamental discoveries follow the lines of the application of known laws like those of Simon Newcomb; vide, the telephone and the phonograph. Now, in the matter of aerial navigation I propose to demonstrate that abstract consideration of the subject points to a machine that is barred from participating in Mr. Hearst's competition. Furthermore, the principles involved have, fortunately, already been demonstrated in two machines which have achieved all the world's records—save speed (which, of course, is merely a matter of design, engines, details).

Let me point out the fact that the speed at which the aeroplane leaves the ground is only twenty miles per hour. The Zeppelin and the Malecot (the new French military dirigible adopted as the result of a competition which was won by an obscure clerk who had studied engineering as a hobby) have both made approximately twice this speed. The conclusion is obvious that planes may be used for sustentation in dirigibles in the same manner that they are used in "aeroplanes." In point of fact, I have the statement of one of Zeppelin's engineers that a lifting force of 4,000 lbs. was actually exerted by the planes on the Zeppelin—although they were not placed there for this purpose. The records of the Zeppelin are: The largest number of passengers, 40; greatest distance, 950 miles; longest duration, 36 hours; speed, 38 miles per hour.

Contrast this with the aeroplane: Largest number of passengers, 5; greatest distance, 290 miles, longest duration, 6 hours, speed, 68 miles per hour.



Altitude records are negligible (although important) because the limitations are identical in both cases provided only the power is sufficient.

Now, in order to point out the trend of progress it must be noted that this new combination of dirigible-plane (which, for lack of a better name, has been called the "Transport") has several independent power units, and its efficiency and feasibility increases with size as the cube of its dimensions. It also has inherent stability.

In equipping an aeroplane with an additional engine many difficulties prolific of danger are involved. Its limitations as to size follow closely the prediction by Newcomb that its size will be limited by the fact that, while its weight increases as the cube of its dimensions, its lifting capacity increases merely as the square—so that a point is reached where it will not lift itself, as demonstrated in a machine recently completed in this vicinity.

(It is to be regretted that Prof. Newcomb's treatment of the problems in aeronautics for the most part seemed to argue that man-carrying flying machines were impossible, even at the very moment when the Wrights were flying.—Ed.)

But the chief difficulty lies in its tending to pitch and dive like a kite—its lack of stability—and this is, and will be, the reason why its use will never extend to the average person. To overcome this difficulty the application of the gyroscope has been suggested; but any person who has seen the mechanical application of the gyroscopic force, and the insecure sliding bearing involved, will instantly dismiss the possibility of its service in aviation. Now, let me state that I hold no brief for the familiar dirigible inflated with hydrogen. As stated in a lecture before the Pasadena Club several years ago, I believe that nothing has served to retard the development of aerial navigation more than the discovery by Prof. Charles, in 1784, that hydrogen could be employed for buoyancy. In an article in "Aeronautics" for March, 1908, I summed up the limitations of this gas and pointed out dangers until then unknown.

I do, however, believe that the permanent value of the Hearst prize would be greater—even if the hydrogen dirigible were admitted—than if all similar craft be barred.

As strong an argument as any I can think of at the present moment, that the trend of progress in aerial navigation will be along the lines of the "Transport," would be the following examples: Supposing two aircraft, one an aeroplane and the other a dirigible, to be caught in a gale of, say, 70 miles per hour, blowing in the direction of its course, the aeroplane would have a minus lifting force, could not continue on its course, and the conditions would be right for a dangerous landing. (An aeroplane, as a matter of fact, does not lose lifting force going with the wind, owing to increased speed.—Editor.) The dirigible, on the other hand, would remain operative. Now, it has often been vaguely expressed in various places that if, on the other hand, the direction of the gale were reversed, the dirigible would, by reason of its greater surface, be retarded more than the aeroplane. It must be admitted that neither craft could be retarded more than the speed of the gale. It may be stated here that the question involved is one of comparative momentum as well as of surface, and the momentum of the dirigible in the line of flight is not in the least affected by its buoyancy—which is a vertical force only; on the other hand, as a large part of the momentum of the aeroplane is partly expended in the lift, and its condition is one of sustentation in the gale, it appears that the chief difference will be caused by the fact that the aeroplane is a small craft, with a small carrying capacity, whereas the dirigible is a large craft, with a large carrying capacity. Speaking of the dirigible, I refer, of course, to the modern "true ship of the air," and not to the obsolete gas bag with motor attached. I am speaking of a type of airship which does not exist in America to-day, and for that reason should be given the benefit of the stimulus of the Hearst prize.

I desire to state in closing that what is said above is not intended to belittle the possibilities of the aeroplane—on the contrary, I am, as ever, boosting the art where it needs boosting.

The conditions of Mr. Hearst's prize might be drawn to admit any type of aircraft not depending solely on hydrogen for sustentation and on propitious air current for propulsion.

Yours very respectfully,

CHARLEMAGNE SIRCH.

Half Interest for a Motor.

To the Editor:

Dear Sir,—Enclosed find small photo taken while I was working on my Curtiss type biplane. Same shows part of the center section assembled.

The machine is now complete and ready for installation of the power plant, which I am, owing to financial reasons, unable to obtain. I am willing to trade half interest in the entire machine for the use of a good motor.

I am nineteen years old, and have been working and experimenting in aeronautics for the last ten months. I have a twenty foot glider, of which I enclose a picture in flight.

I would like to get in touch with a firm wanting to try out a new motor. If you could help me do so it would be greatly appreciated. Yours very truly,

WILBERT L. HUNT.

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TO DELINQUENT SUBSCRIBERS:

I think that you are not giving me, as T. R. would say, a square deal.

In the October number I published the strongest letter I could write and the results seem to have been negligible. Either I am a very poor letter writer or some of the subscribers to this magazine are an extremely hard-hearted group of citizens. I am only too glad to admit the former fact but what am I going to do if you won't "loosen up"?

The Post Office Department will not let me continue sending the magazine unless (1) the subscription price is paid in advance or (2) I have your signed order. I have neither the one nor the other.

You know you want the magazine—you know I want the money. We both agree on that. I have done my part, why not do yours?

If you feel you can worry along without the magazine write and say so. I shall appreciate your frankness to a greater extent than your silence.

E. L. Jones

AERONAUTICS AND WAR.

(Continued from page 189)

ballast. If we throw out sand the balloon will rise again and what happened before will be repeated. More gas will be lost. Thus, during our voyage, there will be a continuous loss of gas, and loss of ballast, until through complete exhaustion of the latter we have nothing to cast away in order to assist the diminishing buoyancy of the remaining gas, and we find ourselves on the ground again. This is the history, in its main features, of the ascent and descent of a balloon in the atmosphere, under the most favorable circumstances.

We cannot remain aloft indefinitely, nor has any balloon, with a few exceptions, yet remained in the air 48 hours. Special conditions of the atmosphere likewise influence to a great degree the duration of the balloon ascension, and among them may be noted the varying temperature. In a clear air under a warm sun the gas will be heated, causing it to expand, which will increase the ascensional power if the balloon is not already full, and if it is, gas will be lost. Sheltered from the rays of the sun under a cold, damp cloud, the gas will condense, causing the balloon to descend through diminished displacement. We have now seen that the limitations to the duration of a balloon ascension are caused by the employment of hydrogen. Hydrogen, unfortunately for our purpose at least, obeys the same law as to expansion and contraction, under the influence of temperature and pressure, as the air. The hot air, coal gas or pure hydrogen is under the same pressure in a balloon as the air without. When the air expands, the hot air or gas in the balloon expands likewise. The pressure from without and the pressure from within are in equilibrium, which explains why a flexible bag of oiled silk remains inflated in the midst of an atmosphere which exercises such a great pressure in every direction.

The ideal arrangement would be a rigid envelope exhausted of its air—a vacuum balloon. Such a balloon would have an ascensional force equal to the entire weight of the atmosphere displaced, less the weight of the envelope and equipment, and it would not be subject to any of the limitations as to the duration of an ascension, as in the case of the hydrogen balloon. But a spherical envelope of 1,000 cu. ft. displacement, in order to rise in the air under these conditions, would have to weigh less than 76 lbs. and support an external pressure of 500 tons. How a structure of such a force and weighing so little can be made with existing materials and kept air-tight is not yet known. To make clear what this pressure is, which would crush any envelope enclosing a vacuum, it is useful to consider that the atmosphere is equivalent to a layer of water over the entire globe of 33 ft. in depth. Such a column of water, 384 inches in height, having a square inch section would weigh 15 pounds, and if its section were one square foot it would weigh over a ton.

NEW WRIGHT MACHINE.

(Continued from page 192)

In one of the Brookins machines the radiator was placed behind the rectangular gasoline tank, situated directly behind the aviator. In the others, the radiator was at the right of the motor, as is customary. All the Wright machines had Mea magnetos. The tires were Hartford

It is unfortunate that the four cylinders out of eight in Brookins' racer should have gone back on him just as he was about to start on the Gordon Bennett, forcing a landing at enormous speed, injuring Brookins and smashing the machine, after it turned a complete somersault in the air after throwing him out.

LOS ANGELES NOVICE MEET.

(Continued from page 206)

it to rear backwards. It came down on its tail, fell over on one wing and rolled over on its back, smashing the machine. Mr. Duesler escaped unhurt.

Walsh Has Coast Record.

Tuesday, the 2d of November, Mr. Walsh remained in the air 23½ minutes, covering an estimated distance of 13½ miles at a height of 80 ft. He is using an Elbridge motor, and the Seely high frequency ignition system, put out by the Seely Company of Los Angeles. From present indications the club will have a number of local fliers at its next meet.

With the backing of the Merchants' and Manufacturers' Association the Aero Club of California had planned to hold a big mid-winter meet from the 9th to 19th of January, 1911, $75,000 to $125,000 to be put up in prizes. On account of the fact that the National Council of the Aero Club of America had assigned those dates to the Aero Club of Pasadena, of which Clifford B. Harmon is honorary president, the Aero Club of California had to abandon its project. At the present writing it looks as though there would be no meet in Southern California this winter worthy of the name.

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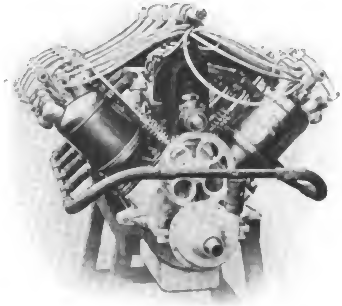

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